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[Bulletin No. 44.]

The publications of the United States Geological Survey are issued in accordance with the statute approved March 3, 1879, which declares that—

"The publications of the Geological Survey shall consist of the annual report of operations, geological and economic maps illustrating the resources and classification of the lands, and reports upon general and economic geology and paleontology. The annual report of operations of the Geological Survey shall accompany the annual report of the Secretary of the Interior. All special memoirs and reports of said Survey shall be issued in uniform quarto series if deemed necessary by the Director, but otherwise in ordinary octavos. Three thousand copies of each shall be published for scientific exchanges and for sale at the price of publication; and all literary and cartographic materials received in exchange shall be the property of the United States and form a part of the library of the organization: And the money resulting from the sale of such publications shall be covered into the Treasury of the United States."

On July 7, 1882, the following joint resolution, referring to all Government publications, was passed by Congress:

"That whenever any document or report shall be ordered printed by Congress, there shall be printed, in addition to the number in each case stated, the 'usual number' (1,900) of copies for binding and distribution among those entitled to receive them."

Except in those cases in which an extra number of any publication has been supplied to the Survey by special resolution of Congress or has been ordered by the Secretary of the Interior, this Office has no copies for gratuitous distribution.

ANNUAL REPORTS.

Of the Annual Reports there have been already published:

I. First Annual Report to the Hon. Carl Schurz, by Clarence King. 1880. 8°. 79 pp. 1 map.—A preliminary report describing plan of organization and publications.

II. Second Annual Report of the United States Geological Survey, 1880–'81, by J. W. Powell. 1882. 8°. lv, 588 pp. 61 pl. 1 map.

III. Third Annual Report of the United States Geological Survey, 1881–'82, by J. W. Powell. 1883. 8°. xviii, 564 pp. 67 pl. and maps.

IV. Fourth Annual Report of the United States Geological Survey, 1882–'83, by J. W. Powell. 1884. 8°. xxxii, 473 pp. 85 pl. and maps.

V. Fifth Annual Report of the United States Geological Survey, 1883–'84, by J. W. Powell. 1885. 8°. xxxvi, 469 pp. 58 pl. and maps.

VI. Sixth Annual Report of the United States Geological Survey, 1884–'85, by J. W. Powell. 1886. 8°. xxix, 570 pp. 65 pl. and maps.

The Seventh and Eighth Annual Reports are in press.

MONOGRAPHS.

Of the Monographs, Nos. II, III, IV, V, VI, VII, VIII, IX, X, XI, and XII are now published, viz:

II. Tertiary History of the Grand Cañon District, with atlas, by Clarence E. Dutton, Capt. U. S. A. 1882. 4°. xiv, 264 pp. 42 pl. and atlas of 24 sheets folio. Price $10.12.

III. Geology of the Comstock Lode and the Washoe District, with atlas, by George F. Becker. 1882. 4°. xv, 422 pp. 7 pl. and atlas of 21 sheets folio. Price $11.

IV. Comstock Mining and Miners, by Eliot Lord. 1883. 4°. xiv, 451 pp. 3 pl. Price $1.50.

V. Copper-Bearing Rocks of Lake Superior, by Roland D. Irving. 1883. 4°. xvi, 464 pp. 15 l. 29 pl. Price $1.85.

VI. Contributions to the Knowledge of the Older Mesozoic Flora of Virginia, by Wm. M. Fontaine. 1883. 4°. xi, 144 pp. 54 l. 54 pl. Price $1.05.

VII. Silver-Lead Deposits of Eureka, Nevada, by Joseph S. Curtis. 1884. 4°. xiii, 200 pp. 16 pl. Price $1.20.

VIII. Paleontology of the Eureka District, by Charles D. Walcott. 1884. 4°. xiii, 298 pp. 24 l. 24 pl. Price $1.10.

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IX. Brachiopoda and Lamellibranchiata of the Raritan Clays and Greensand Marls of New Jersey, by Robert P. Whitfield. 1885. 4°. xx, 338 pp. 35 pl. Price $1.15.

X. Dinocerata. A Monograph of an Extinct Order of Gigantic Mammals, by Othniel Charles Marsh, 1885. 4°. xviii, 243 pp. 56 l. 56 pl. Price $2.70.

XI. Geological History of Lake Lahontan, a Quaternary Lake of Northwestern Nevada, by Israel Cook Russell. 1885. 4°. xiv, 288 pp. 46 pl. Price $1.75.

XII. Geology and Mining Industry of Leadville, with atlas, by S. F. Emmons. 1886. 4°. xxix, 770 pp. 45 pl. and atlas of 35 sheets folio. Price $8.40.

The following is in press:

XIII. Geology of the Quicksilver Deposits of the Pacific Slope, with atlas, by George F. Becker.

The following are in preparation:

I. The Precious Metals, by Clarence King.

— Gasteropoda of the New Jersey Cretaceous and Eocene Marls, by R. P. Whitfield.

— Geology of the Eureka Mining District, Nevada, with atlas, by Arnold Hague.

— Lake Bonneville, by G. K. Gilbert.

— Sauropoda, by Prof. O. C. Marsh.

— Stegosauria, by Prof. O. C. Marsh.

— Brontotheridæ, by Prof. O. C. Marsh.

— The Penokee-Gogebic Iron-Bearing Series of North Wisconsin and Michigan, by Roland D. Irving.

— Younger Mesozoic Flora of Virginia, by William M. Fontaine.

— Description of New Fossil Plants from the Dakota Group, by Leo Lesquereux.

— Report on the Denver Coal Basin, by S. F. Emmons.

— Report on Silver Cliff and Ten-Mile Mining District, Colorado, by S. F. Emmons.

— Flora of the Dakota Group, by J. S. Newberry.

— The Fossil Fishes and Fossil Plants of the Triassic Rocks of New Jersey and the Connecticut Valley, by J. S. Newberry.

BULLETINS.

Each of the Bulletins contains but one paper and is complete in itself. They are, however, numbered in a continuous series, and may be bound in volumes of convenient size. To facilitate this, each Bulletin has two paginations, one proper to itself and another which belongs to it as part of the volume.

Of this series of Bulletins Nos. 1 to 44 are already published, viz:

1. On Hypersthene-Andesite and on Triclinic Pyroxene in Augitic Rocks, by Whitman Cross, with a Geological Sketch of Buffalo Peaks, Colorado, by S. F. Emmons. 1883. 8°. 42 pp. 2 pl. Price 10 cents.

2. Gold and Silver Conversion Tables, giving the coming values of troy ounces of fine metal, etc., by Albert Williams, jr. 1883. 8°. 8 pp. Price 5 cents.

3. On the Fossil Faunas of the Upper Devonian, along the meridian of 76° 30′, from Tompkins County, New York, to Bradford County, Pennsylvania, by Henry S. Williams. 1884. 8°. 36 pp. Price 5 cents.

4. On Mesozoic Fossils, by Charles A. White. 1884. 8°. 36 pp. 9 pl. Price 5 cents.

5. A Dictionary of Altitudes in the United States, compiled by Henry Gannett. 1884. 8°. 325 pp. Price 20 cents.

6. Elevations in the Dominion of Canada, by J. W. Spencer. 1884. 8°. 43 pp. Price 5 cents.

7. Mapoteca Geologica Americana. A Catalogue of Geological Maps of America (North and South), 1752–1881, by Jules Marcou and John Belknap Marcou. 1884. 8°. 184 pp. Price 10 cents.

8. On Secondary Enlargements of Mineral Fragments in Certain Rocks, by R. D. Irving and C. R. Van Hise. 1884. 8°. 56 pp. 6 pl. Price 10 cents.

9. Report of work done in the Washington Laboratory during the fiscal year 1883–'84. F. W. Clarke, chief chemist; T. M. Chatard, assistant. 1884. 8°. 40 pp. Price 5 cents.

10. On the Cambrian Faunas of North America. Preliminary Studies, by Charles D. Walcott. 1884. 8°. 74 pp. 10 pl. Price 5 cents.

11. On the Quaternary and Recent Mollusca of the Great Basin, with Descriptions of New Forms, by R. Ellsworth Call. Introduced by a Sketch of the Quaternary Lakes of the Great Basin, by G. K. Gilbert. 1884. 8°. 66 pp. 6 pl. Price 5 cents.

12. A Crystallographic Study of the Thinolite of Lake Lahontan, by Edward S. Dana. 1884. 8°. 34 pp. 3 pl. Price 5 cents.

13. Boundaries of the United States and of the several States and Territories, by Henry Gannett. 1885. 8°. 135 pp. Price 10 cents.

14. The Electrical and Magnetic Properties of the Iron-Carburets, by Carl Barus and Vincent Strouhal. 1885. 8°. 238 pp. Price 15 cents.

15. On the Mesozoic and Cenozoic Paleontology of California, by Charles A. White. 1885. 8°. 33 pp. Price 5 cents.

16. On the Higher Devonian Faunas of Ontario County, New York, by John M. Clarke. 1885. 8°. 86 pp. 3 pl. Price 5 cents.

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17. On the Development of Crystallization in the Igneous Rocks of Washoe, Nevada, by Arnold Hague and Joseph P. Iddings. 1885. 8°. 44 pp. Price 5 cents.

18. On Marine Eocene, Fresh-water Miocene, and other Fossil Mollusca of Western North America, by Charles A. White. 1885. 8°. 26 pp. 3 pl. Price 5 cents.

19. Notes on the Stratigraphy of California, by George F. Becker. 1885. 8°. 28 pp. Price 5 cents.

20. Contributions to the Mineralogy of the Rocky Mountains, by Whitman Cross and W. F. Hillebrand. 1885. 8°. 114 pp. 1 pl. Price 10 cents.

21. The Lignites of the Great Sioux Reservation, by Bailey Willis. 1885. 8°. 16 pp. 5 pl. Price 5 cents.

22. On New Cretaceous Fossils from California, by Charles A. White. 1885. 8°. 25 pp. 5 pl. Price 5 cents.

23. Observations on the Junction between the Eastern Sandstone and the Keweenaw Series on Keweenaw Point, Lake Superior, by R. D. Irving and T. C. Chamberlin. 1885. 8°. 124 pp. 17 pl. Price 15 cents.

24. List of Marine Mollusca, comprising the Quaternary fossils and recent forms from American Localities between Cape Hatteras and Cape Roque, including the Bermudas, by William H. Dall. 1885. 8°. 336 pp. Price 25 cents.

25. The Present Technical Condition of the Steel Industry of the United States, by Phineas Barnes. 1885. 8°. 85 pp. Price 10 cents.

26. Copper Smelting, by Henry M. Howe. 1885. 8°. 107 pp. Price 10 cents.

27. Report of work done in the Division of Chemistry and Physics, mainly during the fiscal year 1884–'85. 1886. 8°. 80 pp. Price 10 cents.

28. The Gabbros and Associated Hornblende Rocks occurring in the Neighborhood of Baltimore, Md., by George H. Williams. 1886. 8°. 78 pp. 4 pl. Price 10 cents.

29. On the Fresh-water Invertebrates of the North American Jurassic, by Charles A. White. 1886. 8°. 41 pp. 4 pl. Price 5 cents.

30. Second Contribution to the Studies on the Cambrian Faunas of North America, by Charles D. Walcott. 1886. 8°. 369 pp. 33 pl. Price 25 cents.

31. A Systematic Review of our Present Knowledge of Fossil Insects, including Myriapods and Arachnids, by Samuel H. Scudder. 1886. 8°. 128 pp. Price 15 cents.

32. Lists and Analyses of the Mineral Springs of the United States; a Preliminary Study, by Albert C. Peale. 1886. 8°. 235 pp. Price 20 cents.

33. Notes on the Geology of Northern California, by Joseph S. Diller. 1886. 8°. 23 pp. Price 5 cents.

34. On the relation of the Laramie Molluscan Fauna to that of the succeeding Fresh-water Eocene and other groups, by Charles A. White. 1886. 8°. 54 pp. 5 pl. Price 10 cents.

35. The Physical Properties of the Iron-Carburets, by Carl Barus and Vincent Strouhal. 1886. 8°. 62 pp. Price 10 cents.

36. Subsidence of Fine Solid Particles in Liquids, by Carl Barus. 1887. 8°. 58 pp. Price 10 cents.

37. Types of the Laramie Flora, by Lester F. Ward. 1887. 8°. 354 pp. 57 pl. Price 25 cents.

38. Peridotite of Elliott County, Kentucky, by Joseph S. Diller. 1887. 8°. 31 pp. 1 pl. Price 5 cents.

39. The Upper Beaches and Deltas of the Glacial Lake Agassiz, by Warren Upham. 1887. 8°. 84 pp. 1 pl. Price 10 cents.

40. Changes in River Courses in Washington Territory due to Glaciation, by Bailey Willis. 1886. 8°. 10 pp. 4 pl. Price 5 cents.

41. Fossil Faunas of the Upper Devonian—the Genesee Section, New York, by Henry S. Williams. 1886. 8°. 121 pp. 4 pl. Price 15 cents.

42. Report of work done in the Division of Chemistry and Physics, mainly during the fiscal year 1885–'86. F. W. Clarke, chief chemist. 1887. 8°. 152 pp. 1 pl. Price 15 cents.

43. On the Tertiary and Cretaceous Strata of the Tuscaloosa, Tombigbee, and Alabama Rivers, by Eugene A. Smith and Lawrence C. Johnson. 1887. 8°. 189 pp. 21 pl. Price 15 cents.

44. Bibliography of North American Geology for 1886, by Nelson H. Darton. 1887. 8°. 35 pp. Price 5 cents.

Numbers 1 to 6 of the Bulletins form Volume I; Numbers 7 to 14, Volume II; Numbers 15 to 23, Volume III; Numbers 24 to 30, Volume IV; Numbers 31 to 36, Volume V; Numbers 37 to 41, Volume VI. Volume VII is not yet complete.

The following are in press:

45. Present Condition of Knowledge of the Geology of Texas, by Robert T. Hill. 1887. 8°.

46. The Nature and Origin of Deposits of Phosphate of Lime, by R. A. F. Penrose, jr.

47. Analyses of Waters of Yellowstone National Park, by F. A. Gooch and J. E. Whitfield.

48. On the Form and Position of the Sea Level, by R. S. Woodward.

49. On the Latitude and Longitude of Points in Missouri, Kansas, and New Mexico, by R. S. Woodward.

50. Invertebrate Fossils from California, Oregon, Washington Territory, and Alaska, by C. A. White.

51. On the Subaërial Decay of Rocks and the Origin of the Red Color of Certain Formations, by Israel C. Russell.

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In preparation:

— The Glacial Lake Agassiz, by Warren Upham.
— Notes on the Geology of Southwestern Kansas, by Robert Hay.
— On the Glacial Boundary, by G. F. Wright.
— Geology of the Island of Nantucket, by N. S. Shaler.
— Author Catalogue of Contributions to North American Geology, 1790-1886, by Nelson H. Darton.
— The Gabbros and Associated Rocks in Delaware, by F. D. Chester.
— Report on the Geology of Louisiana and Texas, by Lawrence C. Johnson.
— Fossil Woods and Lignites of the Potomac Formation, by F. H. Knowlton.
— Contributions to the Mineralogy of the Pacific Coast, by W. H. Melville and Waldemar Lindgren.

STATISTICAL PAPERS.

A fourth series of publications, having special reference to the mineral resources of the United States, has been undertaken.

Of that series the following have been published:

Mineral Resources of the United States [1882], by Albert Williams, jr. 1883. 8°. xvii, 813 pp. Price 50 cents.

Mineral Resources of the United States, 1883 and 1884, by Albert Williams, jr. 1885. 8°. xiv, 1016 pp. Price 60 cents.

Mineral Resources of the United States, 1885. Division of Mining Statistics and Technology. 1886. 8°. vii, 576 pp. Price 40 cents.

In press:

— Mineral Resources of the United States, 1886, by David T. Day. 1887. 8°.

Correspondence relating to the publications of the Survey and all remittances (which must be by POSTAL NOTE OR MONEY ORDER, not stamps) should be addressed

To the Director of the
United States Geological Survey,
Washington, D. C.

Washington, D. C., *November* 30, 1887.

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UNITED STATES GEOLOGICAL SURVEY

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BY

NELSON H. DARTON

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LSON H. DARTON.

INTRODUCTION.

embraces papers or parts of papers relating
merica issued during the year 1886 or bearing
ions and book lists of the following institutions
reparation:

NOR

oceedings, vol. 21.
for the Advancement of Science, Proceedings, 1885 and 1886.
Mining Engineers, Transactions.
Science.
of Natural History, Bulletin, December 28, 1886.
t.
hical Society, Proceedings, vol. 23, Nos. 121 and 123.
4, No. 3.
of Natural History, Proceedings, April 1, 1885, to March 17, 1886.
ety of Natural History, Proceedings, Nos. 1 and 2.
of Natural Sciences, Bulletin, vol. 5, Nos. 1 and 2.
ademy of Sciences, Bulletin, vol. 2, No. 5.
stitute, Proceedings, vol. 3, Nos. 3 and 4, vol. 4, No. 1.
ecord of Science, vol. 2, Nos. 1–4.
Society of Natural History, Journal, vol. 8, No. 9.
Scientific Society, Transactions, vol. 2, part 1.
University, Bulletin, No. 1.
nes Academy of Science, Bulletin, vol. 1, No. 1.
Mitchell Natural History Society, Journal, 1885–'86.
eering and Mining Journal, vol. 42.
Institute, Bulletin, vol. 17, Nos. 4–6; vol. 18, Nos. 1–6.
logical Society, Quarterly Journal.
ellschaft für Erdkunde zu Berlin, Zeitschrift, vol. 21.
amilton Association, Journal, vol. 1, No. 2.
owa Historical Record, October, 1885, January and July, 1886.
Johns Hopkins University, Circulars, Nos. 43–52.
Manitoba Historical and Scientific Society, No. 20.
Nature.
Neues Jahrbuch.
New Brunswick Natural History Society, Bulletin, No. 5.
New York Academy of Sciences, Annals, vol. 3, Nos. 9–12.
New York Academy of Sciences, Transactions, vol. 5, Nos. 1–6.
Pacific Coast Technical Society, Proceedings, vol. 3, Nos. 1, 3, and 4.

ASHBURNER (C. A.)—Continued.

Describes other Carboniferous limestone beds in Pennsylvania and the occurrence and horizon of the beds in the Wyoming Valley.

—— Second report of progress in the anthracite coal regions.

Annual Report of the Geol. Survey of Pa. for 1885, pp. 269-490 and 2 pls.

General description of topography; structural geology, stratigraphic geology and mining, classification and composition of coals; report of progress in the various coal fields of the region; description of the geologic, mine, and columnar section sheet and on the basins and anticlines in the northern field; report on the Bernice coal basin, and report on Wyoming Valley limestone beds, also published in Wyoming Hist. and Geol. Soc. Proc. vol. 2, pp. 254-277.

Atlantic, age of basin, DANA, NEWBERRY, HULL.

geology of, DAWSON.

AUGHEY (Samuel). Annual report of the territorial geologist to the governor of Wyoming, 1886, pp. 120, 8°, Laramie, 1886.

Describes the condition of mines and some geologic features in the Silver Crown, Seminole, Ferris, Sweetwater, Owl Creek, Bridger, and Cummins City mining districts; the iron ore deposits and their geologic position; the petroleum district: its geology, structure, geologic history, genesis of its oil, climate, productions, &c.; and a list of minerals of the territory.

B.

BAILEY (L. W.). Explorations and surveys in portions of the counties of Carleton, Victoria, York, and Northumberland, N. B.

Annual Report of the Geol. Survey of Canada, vol. 1, n. s. G, pp. 29 and map.

Describes the stratigraphic and structural features of the several formations and discusses their age &c. The paper is accompanied by a colored geologic map.

—— Geology and geologists in New Brunswick.

Canadian Rec. Sci. vol. 2, pp. 93-96.

Discusses Wadsworth's criticisms on the geologic work in New Brunswick and the structure and stratigraphic relations of the Cambrian.

BARCENA (Mariano). The fossil man of Peñon, Mexico.

Am. Nat. vol. 20, pp. 633-635.

Describes beds in which the remains occur and does not consider them modern travertine as supposed by Newberry.

BARRIS (W. H.). A defense of our local geology.

Davenport Acad. Sci. Proc. vol. 5, pp. 15-22.

BECKER (George F.). Cretaceous metamorphic rocks of California.

Am. Jour. Sci. III, vol. 31, pp. 348-357.

Describes beds near Neocomian in age lying upon the Archean of the Coast Ranges and altered to crystalline and serpentine rocks, of which the petrographic character is described. Discusses modes and means of metamorphism.

Reviewed in Nature, vol. 34, pp. 80-81.

BECKER (G. F.)—Continued.

—— The Washoe rocks.

California Acad. Sci. Bulletin No. 6, pp. 93-120.

Reviews Hague and Iddings's criticisms and describes the mode of occurrence and petrography of the rocks in question. Discusses conditions of extrusion and crystallization and the extension of the various rock masses in the district.

BELL (Robert). The mineral resources of the Hudson Bay territories.

Am. Inst. Mining Eng. Trans., vol. 15, p. 9.

Describes the geology of the district.

—— The mode of occurrence of apatite in Canada.

Canadian Inst. Proc. vol. 21, pp. 294-302.

Describes the lithology of the apatite bearing rocks.

—— Observations on the geology, zoölogy, and botany of Hudson Strait and Bay.

Annual Report of the Geol. Survey of Canada, vol. 1, n. s. DD, pp. 26.

Describes some features of the crystalline, Silurian, Devonian, volcanic, and drift formations. Discusses source of volcanic rocks and evidence of glaciation.

BENTON (Edward R.). Notes on the samples of iron ore collected in Maryland.

Tenth Census: Report on the Mining Industries of the United States, pp. 245-260.

Detailed description of some of the deposits.

—— Notes on samples of iron ore collected in Northern New England.

Tenth Census: Report on the Mining Industries of the United States, pp. 79-82.

BENTON (E. R.)—Continued.

Describes some features of the formations associated with the ore beds.

—— Notes on the samples of iron ore collected in Virginia.

Tenth Census: Report on the Mining Industries of the United States, pp. 261-268.

Description of the geology and structure of the formations associated with some of the ore beds.

BISHOP (I. P.). On certain fossiliferous limestones of Columbia Co., N. Y., and their relation to the Hudson River shales and the Taconic system.

Am. Jour. Sci. III, vol. 32, pp. 438-441.

Describes the occurrence of Trenton fossils near Chatham and the stratigraphic relations of the rocks to others in the same general district.

Bonneville, Lake, GILBERT.

BOYD (C. R.). The economic geology of the Bristol and Big Stone gap section of Tennessee and Virginia.

Am. Inst. Mining Eng. Trans. vol. 15, p. 8.

Describes the geology and structure of the district in considerable detail.

BRAINERD (Alfred F.). Note on a deposit of fire sand in Clinton County, N. Y.

Am. Inst. Mining Eng. Trans. vol. 15, p. 3.

Describes the occurrence of the sand and its composition. It overlies Potsdam sandstone.

BRANNER (John C.). [Geologic map of Indiana, colored according to the scheme of the International Geologic Congress. 2 by 4 inches.]

Accompanied by a circular, in French, calling attention to inapplicability of the scheme of coloration for the representation of the subdivisions of the formations in Indiana.

—— Glaciation of the Lackawanna Valley.

Am. Ass. Adv. Sci. Proc. vol. 34, pp. 212-214.

Gives the result of many observations of drift striæ and notes some of variable directions. Discusses the effect of topography on the ice flow.

—— The glaciation of parts of Wyoming and Lackawanna Valleys.

Am. Phil. Soc. Proc. vol. 23, pp. 337-357.

Describes and gives maps of the topography and discusses its relation to the ice flow. Describes the drift and discusses the mechanical effect of the glaciation. Discusses pot-holes, striæ, and preglacial and postglacial drainage.

BRANNER (J. C.)—Continued.

—— The thickness of the ice in Northeastern Pennsylvania during the glacial epoch.

Am. Jour. Sci. III, vol. 32, pp. 362-366.

Finds glacial striæ on top of "North Knob" of Elk Mountains, contrary to the statement of Lewis and Wright that this and other eminences of similar height were above the line of glaciation.

British Columbia, glacial shell-beds, LAMPLUGH.

BRITTON (N. L.). [Additional notes on the geology of Staten Island, New York.]

Nat. Sci. Ass. of Staten Island, Proc. Oct. 1886.

Describes structure of serpentine and occurrence of other rocks. Discusses the relation to similar rocks of New York Island and the deposition and metamorphism of the original sediments. Calls attention to areas of preglacial drift and a driftless area north of the terminal moraine.

—— [Fossil leaves in the Cretaceous of Staten Island.]

N. Y. Acad. Sci. vol. 5, pp. 28-29.

Describes the section including the bed in which the leaves were found.

—— [Notes on the occurrence of a schistose series of crystalline rocks in the midst of the Adirondacks.]

N. Y. Acad. Sci. Trans. vol. 5, p. 72.

—— [On the drift at the south end of tunnel at Tompkinsville, N. Y.]

Nat. Sci. Ass. of Staten Island, Proc. April, 1886.

Describes contact of morainal and stratified drift. Discusses coast subsidence and the terraces of the Hudson River.

—— [Remarks on the floor of the Trias of New Jersey and the lithology of the tide water gneisses.]

N. Y. Acad. Sci. vol. 5, pp. 19 and 20.

Calls attention to the occurrence of slate and limestone on the northwestern border of the Trias and to the similarity of the gneisses of Central Park, New York, and Fairmount Park, Philadelphia.

—— [Report on the study of the Archean rocks of New Jersey.]

Annual Report of the State Geologist [of N. J.] for 1885, pp. 36-55.

After a historical résumé of former investigations there is given a description of the rocks,

BRITTON (N. L.)—Continued.

their distribution and structure, relation of stratified and unstratified deposits, the occurrence of magnetites and the contact phenomena with the Paleozoic rocks. The question of age is briefly discussed. The paper is accompanied by sections, with exaggerated vertical scales, showing the structure along a number of lines across the formation.

—— [Results of a cruise along the shores of Staten Island and New Jersey.]

Nat. Sci. Ass. of Staten Island, Proc. Sept. 1886.

Calls attention to the exposures of drift and Cretaceous and to changes of coast line.

BRÖGGER (W. C.). On alderen af Olenellnszonen i Nordamerica.

Geol. Förening. Stockholm, Band 8, Hefte 1-4, p. 182.

Not seen.

Buffalo and Chicago, CLAYPOLE.

Buried Valley. See **Quaternary.**

C.

California, Cretaceous, BECKER.
  elevation of Sierra Nevada, LE CONTE.
  geology of Northern, DILLER.
  observations in, VOM RATH.
  profiles through Sierra Nevada, REYER.

Cambrian, age of Granville roofing slates, Washington Co., N. Y., WALCOTT.
  classification of, WALCOTT.
  faunas of North America, WALCOTT, HUNT.
  of New Brunswick, BAILEY.
  of North America, BRÖGGER.
  revision of, in Minnesota, WINCHELL.

CAMPBELL (J. L. and H. D.). Wm. B. Rogers' Geology of the Virginias. A review.

Am. Jour. Sci. III, vol. 30, pp. 357-374; vol. 31, pp. 193-202.

Briefly states Rogers's views and gives much additional information, beginning with the Archean and taking up each formation in turn.

Canada, apatite rocks, BELL, FALDING.
  Cascade coal fields, DAWSON, MERRITT.
  coal of Northwestern, KINAHAN.
  Cypress Hills, Wood Mountain, and adjacent country, MCCONNELL.
  drift and sea margins at Little Metis, DAWSON.
  geologic survey report, SELWYN.
  geology of islands in Lake Winnipeg, PANTON.
  glacial shell beds in British Columbia, LAMPLUGH.
  ice grooved rock surfaces, Vancouver Island, LAMPLUGH.

Canada—Continued.
  Lake of Woods region, LAWSON.
  landslide, Ontario, SPENCER.
  Mistassini expedition, LOW.
  Rocky Mountain district, DAWSON, MCCONNELL.
  schistose structure, LAWSON.
  Selkirk, shells in sand, MCDOUGALL.
  Wallbridge iron mines, CHAPMAN.

  See **New Brunswick** and **Nova Scotia.**

Carboniferous, Alabama, Raccoon coal field, GIBSON.
  Alabama, Warrior coal field, MCCALLEY.
  anthracite of Pennsylvania, ASHBURNER.
  Arkansas, HARVEY.
  California, DILLER.
  Colorado coal, HILLS.
  mountain limestone, Washington Co., Pa., LINN.
  Pittsburgh coal, D'INVILLIERS, LESLEY.
  Wellersburg, Pa., fire clay, LESLEY, HARDEN.
  Wyoming Valley, Pa., ASHBURNER.

CARLL (John F.). Preliminary report on oil and gas.

Annual Report of the Geol. Survey of Pa. for 1885, pp. 1-81 and map. Abstract in Petroleum Age, vol. 5, No. 10, Nov. 1886, pp. 1467-1469.

Discusses the horizon of the oil sands, the relations of gas to oil, theories of oil and gas, and the present status of knowledge in regard to the geology of oil.

CARTER (Oscar C. S.). Ores, minerals, and geology of Montgomery County, Pa., pp. 32 and map, imp. 8° [Philadelphia, 1886].

From History of Montgomery County.

Description of deposits of copper, iron, and graphite, and of the more general geologic features as described by others. The paper is accompanied by a colored geologic map slightly differing in some respects from that published officially.

Central America, volcanic rocks, HAGUE.

CHALMERS (R.). Preliminary report on the surface geology of New Brunswick.

Annual Report of the Geol. Survey of Canada, vol. 1, n. s. GG, pp. 58 and map.

Issued separately in 1885.

CHAMBERLIN (T. C.). An inventory of our glacial drift.

Am. Ass. Adv. Sci. Proc. vol. 35, pp. 195-211. Abstract in Science, vol. 8, pp. 156-159.

Describes outline of drift limit, points out varying character of margins of drift sheets, and states conclusions drawn therefrom as to different periods of formation and agencies of deposition. Discusses terminal, interlobate, and lateral moraines; till tumuli; mammillary and lenticular hills; "drumlins," &c.; also, classes of assorted drift: Orange sands, osars, kames, &c.; valley drift; moraine headed gravel trains; loess tracts; and lake basin deposits. Refers to speculations respecting origin of glacial epoch.

—— [Report of division of Quaternary geology.]

Fifth Annual Report of the U. S. Geol. Survey, 1883-'84, pp. 20-24.

Calls attention to some drift phenomena in Iowa, Nebraska, and Dakota.

—— The requisite and qualifying conditions of artesian wells.

Fifth Annual Report of the U. S. Geol. Survey, 1883-'84, pp. 125-127.

Contains a discussion of the geologic elements affecting the success of artesian wells.

CHANCE (H. M.). The anticlinal theory of natural gas.

Am. Inst. Mining Eng. Trans. vol. 15, p. 11.

CHAPMAN (E. J.). On the Wallbridge hematite mine, as illustrating the stock-formed mode of occurrence of certain ore deposits.

Roy. Soc. Canada, Proc. vol. 3, Section IV, pp. 23-26.

CHAPMAN (E. J.)—Continued.

Describes the crystalline rocks of the district; discusses the nature of some of the beds and the time of extrusion of the red syenites, which are thought to have been introduced in molten condition.

CHAUVENET (W. M.). Notes on the samples of iron ore collected in Alabama.

Tenth Census: Report on the Mining Industries of the United States, pp. 383-399.

Occasional items of geologic information.

—— Notes on the samples of iron ore collected in Kentucky.

Tenth Census: Report on the Mining Industries of the United States, pp. 289-300 and map.

Description of geologic features of some of the mines.

—— Notes on the samples of iron ore collected in Missouri.

Tenth Census: Report on the Mining Industries of the United States, pp. 403-420.

Geologic description of the deposits.

—— Notes on the samples of iron ore collected in Tennessee.

Tenth Census: Report on the Mining Industries of the United States, pp. 351-365.

Description of geologic features at some of the mines.

Chesapeake Bay, geology at head of, MCGEE.

CHESTER (Frederick D.). Results from a study of the gabbros and associated amphibolites in Delaware.

Am. Ass. Adv. Sci. Proc. vol. 34, pp. 215-216.

Supposes the gabbro to have been intruded between gneisses of the Philadelphia belt. Describes its petrography and distribution and also that of the associated amphibolites and gabbro-diorites. Discusses the cause and effect of foliation and of paramorphic changes.

Cincinnati, geology of, JAMES.

CLARKE (F. W.). Report of work done in the division of chemistry and physics, 1884-'85.

U. S. Geol. Survey Bulletin No. 27, vol. 4, pp. 531-610.

Gives analyses of fayalite from Yellowstone Park; serpentine from Newburyport, Mass.; hornblende-andesite from Bogusloff Island; eruptive rocks from New Mexico; dacite and rhyolite from Washoe, Nev.; sandstone from Ohio and from Stony Point, Mich.; limestone from Randolph County, Va.; and coals and

CLARKE (F. W.)—Continued.
minerals from various localities. The analyses were made by Clarke, Gooch, Chatard, Whitfield, and Riggs.

CLARKE (J. M.). A brief outline of the geological succession in Ontario County, New York, p. 14, map, 8°.

Assembly Document No. 16, Albany, 1886. Not seen.

CLAYPOLE (E. W.). Buffalo and Chicago, or "What might have been."

[Read to the American Association for the Advancement of Science, 1886.]
Am. Nat. vol. 20, pp. 856–862.
Abstract in Am. Ass. Adv. Sci. Proc. vol. 35, p. 224.
Discusses the effect of slight causes upon the drainage of the great lakes and the glacial outlet near Chicago. Thinks that the subsidence of the St. Lawrence region was sufficient to necessitate the present drainage, but that it was more probably due to a glacial ice dam in the Straits of Mackinaw during the retreat of the glacier.

—— The old gorge at Niagara.

Science, vol. 8, p. 236.
Discusses early drainage of the district and announces discovery of ledges of limestone in the valley from the whirlpool.

Clinton group, Alabama, Georgia, and Tennessee, PORTER.
of Ohio, FOERSTE.

Coal, Alabama, Georgia, and Tennessee, PORTER.
anthracite region of Pennsylvania, ASHBURNER.
Arkansas, HARVEY.
Colorado, HILLS.
field, Ohio, ORTON.
field, Pittsburgh, D'INVILLIERS, LESLEY.
field, Warrior, Alabama, McCALLEY.
Mexico, COPE.
Montana, DAVIS, ELDRIDGE.
of Northwest Canada, KINAHAN.
of the Northwest, PUMPELLY.
of the United States, PRIME.
Ohio, characteristics of, ORTON.
origin, LESQUEREUX.
Raccoon field, Alabama, GIBSON.
Rocky Mountains in Canada, DAWSON, MERRITT.
Sydney, N. S., ROUTLEDGE.
Tipton Run, Pa., ASHBURNER.
Washington Territory, WILLIS

Colorado, cañon, PRESTWICH.
coal, HILLS.
conglomerate beds of Jefferson Co., CROSS.
extinct geyser basin, COMSTOCK.
observations in, VOM RATH.
rhyolite, CROSS.
San Juan Mountains, COMSTOCK.
trip to Telluride, San Miguel Co., VAN DIEST.
veins and geology of Southwestern, COMSTOCK.

COMSTOCK (Theodore B.). A remarkable extinct geyser basin in Southwestern Colorado.

[Read to American Association, 1886.]
Am. Nat. vol. 20, pp. 963–965. Abstract in Am. Ass. Adv. Sci. Proc. vol. 35, p. 232.
Briefly describes mounds and other evidences of former geyser action.

—— Peculiarities of the drift of the Rocky Mountains.

Abstract in Am. Nat. Nov. 1886, and brief notice in Am. Assoc. Adv. Sci. Proc. vol. 35, p. 233.
Discussion of results of glacial action, characteristics of the drift, and relation of timber line to glaciation.

—— The geology and vein structure of Southwestern Colorado.

Am. Inst. Mining Eng. Trans. vol. 15, p. 48 and map.
After a description of the topography, the general geology of the district is described and the age and relations of the various formations are discussed, from the Archean to the volcanic and drift. The source of the volcanic rocks and the order and means of their extrusion and their relation to the veins are reviewed in detail and an account is given of the veins and their mineral contents. The paper is accompanied by a geologic map and two topographic maps.

—— The veins of Southwestern Colorado.

[Read to American Association, 1886.]
Am. Nat. vol. 20, pp. 1043–1044.
Supposes the vein history of the San Juan district to have commenced at the close of the Cretaceous. Discusses briefly the sequence of lava flows, dislocations, and vein formation.

Connecticut, cutting of gorges in trap ridges, EMERSON.
iron ore mines, PUTNAM.
trap and sandstone at Tariffville, RICE.
Trias of, DAVIS.

Continents and ocean basins, LE CONTE.

COOK (George H.). Geological survey of New Jersey, annual report of the State geologist for the year 1885, pp. 228, 8°, Trenton, 1885.

Administrative report; introductory remarks to papers on geology by Britton and by F. J. H. Merrill; account of mining operations; paper on water supply from artesian and other bored wells in New Jersey; drainage; forestry; history of the geological surveys in New Jersey; and discussion of methods of topographic survey.

—— Sketch of the geology of the Cretaceous and Tertiary formations of New Jersey.

In Brachiopoda and Lamellibranchiata of the Raritan Clays and Greensand Marls of New Jersey, by R. P. Whitfield, U. S. Geol. Survey, Monograph No. 9, pp. ix-xiii and map in pocket. (Also published by New Jersey Geological Survey.)

Describes and shows the areal distribution, structure, and stratigraphy of the formations. Discusses the age of the post-Cretaceous formations of Southern New Jersey.

[**COPE** (E. D.).] [On the recent earthquake.]

Am. Nat. vol. 20, pp. 869-870.

Discusses the cause and calls attention to a fault along the fall line of the Atlantic seaboard.

—— Report on the coal deposits near Zacualtipan, in the State of Hidalgo, Mexico.

Am. Phil. Soc. Proc. vol. 23, pp. 146-151.

Describes the geology of the coal bearing Cretaceous beds and the associated trap rocks.

CORNING (Frederick G.). The gold deposits of the Tipuani River, Bolivia, S. A.

Eng. and Mining Journal, vol. 42, pp. 58-60.

Describes the gravels and the rocks upon which they lie.

CRAGIN (F. W.). Further notes on the Dakota gypsum of Kansas.

Washburn Coll. Lab. Bulletin, vol. 1, pp. 166-168.

Discusses its stratigraphic position and genesis. Describes new localities.

CRANDALL (A. R.). The occurrence of trap rocks in Eastern Kentucky.

Am. Ass. Adv. Sci. Proc. vol. 34, pp. 236-237.

Describes dike in Carboniferous of Elliott County. (See also paper on same by J. S. Diller.)

Cretaceous, California, BECKER, LE CONTE.

coal of Northwest Canada, KINAHAN.
coal of Rocky Mountains, MERRITT.
fauna of New Jersey, WHITFIELD.
flora of North America, NEWBERRY.
floras of the Northwest, DAWSON.
Montana, HAYDEN.
Nebraska, HICKS.
New Jersey, COOK.
Staten Island, N. Y., BRITTON.
Texas, HILL.

CROSBY (Wm. O.). Common minerals and rocks, pp. 205, 12°, Boston, 1886.

[Guides for Science Teaching.]

—— Notes on joint structure.

Boston Soc. Nat. Hist. Proc. 1885, pp. 243-248.

Discusses previous views on joint structure. Describes joints in Miocene sediments on Potomac River and in felsite at Needham, Mass.

CROSS (Whitman). On the occurrence of topaz and garnet in lithophyses of rhyolite.

[Read to Colorado Scientific Society.]

Am. Jour. Sci. III, vol. 31, pp. 432-438.

Describes mode of occurrence and petrography of the rhyolite.

—— and **EAKINS** (L. G.). On ptilolite, a new mineral.

Am. Jour. Sci. III, vol. 32, pp. 117-121.

[Read before the Colorado Scientific Society, May, 1886.]

Incidentally describes some features of the conglomerate beds of Jefferson County, Colorado, and the andesite pebbles of which it is chiefly composed.

CROZIER (A. A.). Evidences of glacial action on the shores of Lake Superior.

Science, vol. 7, p. 145.

Calls attention to glacial grooves and scratches about Peninsula Harbor and terrace on Verte Island in Nipigon Bay.

D.

Dakota, drift, CHAMBERLIN.

DALE (T. Nelson). New England Upper Silurian.

Canadian Inst. Proc. vol. 22, pp. 69–70.

Describes the metamorphosed Helderberg rocks at Bernardston, Mass., and Littleton, N. H.

DANA (James D.). A dissected volcanic mountain; some of its revelations.

Am. Jour. Sci. III, vol. 32, pp. 247–255.

Describes the Island of Tahiti, its topography and erosion, and the structure of its lava flows and volcanoes.

—— On the Lower Silurian fossils from a limestone of the original Taconic of Emmons.

[Read to American Association, 1885.]

Am. Jour. Sci. III, vol. 31, pp. 241–248.

Briefly reviews Emmons's Taconic theories and calls attention to the danger of correlating formations by lithologic analogies. Describes the occurrence of fossils at Canaan in the "Sparry" limestones of Emmons, in the same general vicinity near the overlying slates, and also in detached masses of limestone. Traces the same limestone belt northward across Massachusetts into Vermont.

—— [On volcanic eruption.]

Am. Jour. Sci. III, vol. 31, pp. 395–397.

—— The history of Taconic investigation previous to the work of Professor Emmons.

[Opening part of address to Berkshire Historical Society.]

Am. Jour. Sci. III, vol. 31, pp. 399–400.

Describes Eaton and Dewey's geologic studies in the Taconic district.

—— The Taconic stratigraphy and fossils.

Am. Jour. Sci. III, vol. 32, pp. 236–239.

Gives a brief résumé of the stratigraphy and structure of the Taconic district. Discusses the possibility of superposition by overthrust, with negative conclusion. Calls attention to increase of the amount of metamorphism eastward and to its effects upon organic remains.

[——] Geologic age of the North Atlantic oceanic basin and origin of Eastern American sediments.

Am. Jour. Sci. III, vol. 32, pp. 407–408.

Describes the derivation of the American Paleozoic from the Archean border in opposition to Hull's idea of their origination from the district now covered by the Atlantic.

DARTON (Nelson H.). [Notes on the formations associated with the Green Pond Mountain series and on the geology of Orange County, New York.]

Mineral Physiology and Physiography, by T. Sterry Hunt, p. 591.

Calls attention to the occurrence of Upper Silurian limestones at Upper Longwood and Newfoundland, N. J., and to some points in the geology of Orange County.

—— On the area of Upper Silurian rocks near Cornwall Station, Eastern-Central Orange County, New York.

Am. Jour. Sci. III, vol. 31, pp. 209–216.

Describes Lower Helderberg limestones and underlying conglomerate, forming an outlier far from the main mass of the formation; the Water Lime, Pentamerus, and Delthyris Shale being recognized, the last by finely preserved fossils of many species, some peculiarities of which are described.

—— The Taconic controversy in a nutshell.

Science, vol. 7, pp. 78–79.

Calls attention to the significance of his discovery, and that of Dale and others, of the occurrence of Trenton fossils in the slates of Orange County, N. Y.

Davenport, Iowa, geology, BARRIS.

DAVIS (William M.). The structure of the Triassic formation of the Connecticut Valley.

Am. Jour. Sci. III, vol. 32, pp. 342–352.

Abstract in Am. Ass. Adv. Sci. Proc. vol. 35, pp. 224–227.

Discusses the Triassic monoclines and the means by which they were effected. Calls attention to the presence of strike faults in Connecticut and Massachusetts and describes the structure of Toket and Pond Mountains as an instance. Discusses the possible extension of the Trias over the area now separating the New Jersey and Connecticut districts and the mode of separation. Discusses faulting in general and advances a hypothesis to account for the monoclinal structure and the many observed faults. Presents some evidence upon which the hypothesis is based.

—— Relation of the coal of Montana to the older rocks.

Tenth Census: Report on the Mining Industries of the United States, pp. 697–737.

DAVIS (W. M.)—Continued.

Detailed geologic description of an area of about 10,000 square miles in South-Central Montana. Lists of fossils by Whitfield and description of eruptive rocks by Lindgren.

DAWSON (George M.). Preliminary report on the physical and geological features of that portion of the Rocky Mountains between lat. 49° and 50° 30′.

Annual Report of the Geol. Survey of Canada, vol. 1, n. s. B, pp. 167 and map.

Account of previous explorations and reports. Description of physiography, flora, and the distribution, stratigraphy, structure, and relations of the geologic formations. The paper is illustrated by plates from photographs, a colored map, and sections of the Cascade coal district and of a portion of the Rocky Mountains.

DAWSON (*Sir* William). Cretaceous floras of the Northwest.

Canadian Rec. Sci. vol. 2, pp. 1-2.

Discusses horizon of the Kootanie and of the other groups and the climate and floral conditions at the time of their deposition.

—— Geology of the Atlantic Ocean.

[Address to British Association, September, 1886.]

Canadian Rec. Sci. vol. 30, pp. 201-228 and 265-285. Also in Popular Science Monthly, vol, 30, pp. 41-51, 184-194, and Sci. Amer. Supt. vol. 22, pp. 9020-9023.

Discusses the Appalachian flexures and the derivation of the materials of the formations of the Eastern United States.

—— Note on bowlder drift and sea margins at Little Metis, Lower St. Lawrence.

Canadian Rec. Sci. vol. 2, pp. 36-38.

Describes the beaches and terraces and discusses their origin.

—— On the Mesozoic floras of the Rocky Mountain region of Canada.

Roy. Soc. Canada, Trans. vol. 3, Sec. IV, pp. 1-22 and pl.

Includes a brief description of the formations, their horizon, structure, and history, by G. M. Dawson. Discusses the geologic relation of the floras.

Delaware, gabbros &c., CHESTER.

Devonian, Chemung section, Bradford County, Pa., LILLEY.
 classification of Upper, WILLIAMS.
 Oriskany in Lycoming County, Pa., WOOLMAN.
 revision of Cayuga Lake section, N. Y., WILLIAMS.
 Tully Limestone, WILLIAMS.

DILLER (J. S.). Notes on the geology of Northern California.

U. S. Geol. Survey Bulletin No. 33, vol. 5, pp. 369-387.

Describes the carboniferous limestones, the structure of the Sierra Nevada, and the general distribution of the metamorphic, volcanic, and cretaceous rocks. Discusses the age of the faulting of the Sierra Nevada, the age of the auriferous slates, and the relation of the Sierra, Coast, and Cascade Ranges.

—— Notes on the peridotite of Elliott County, Kentucky.

Am. Jour. Sci. III, vol. 32, pp. 121-125.

Describes the petrographic nature of the dikes in the carboniferous sandstones and shales in Eastern Kentucky and discusses their relations to the strata, arriving at the conclusion that the peridotite has been intruded into its present position.

Dinocerata, MARSH.

D'INVILLIERS (E. V.). Preliminary report of work done in 1885 on the resurvey of the Pittsburgh coal region.

Annual Report of the Geol. Survey of Pa. for 1885, pp. 125-221 and pl.

Lists of elevations, description of geologic structure and of the Pittsburgh and associated coal beds and rocks.

—— The Cornwall iron ore mines, Lebanon County, Pa.

Am. Inst. Mining Eng. Trans. pp. 32 and map.

Describes the geology and structure of the district; the trap rocks and their relations to the shales and limestones. The paper is accompanied by a map and geologic sections.

—— See, also, **Lesley** (J. P.) and **D'Invilliers** (E. V.).

District of Columbia, geology of, MCGEE.

Drift. See **Quaternary.**

DRUMMOND (A. T.). Our northwest prairies; their origin and their forests.

Canadian Rec. Sci. vol. 2, pp. 145-153.

Describes some features of the drift deposits and discusses the effect of glacial action.

DWIGHT (William B.). Recent explorations in the Wappinger Valley limestone of Dutchess County, N. Y., No. 5. Discovery of fossiliferous Potsdam strata at Poughkeepsie, N.Y.

[Read to American Association.]

Am. Jour. Sci. III, vol. 31, pp. 125-133 and pl. VI.

DWIGHT (W. B.)—Continued.

Abstract in Am. Ass. Adv. Sci. Proc. vol. 34, pp. 204–209.

Describes lithology and stratigraphy of the district in which Hudson River, Calciferous, Trenton, and Potsdam are associated. All are fossiliferous. Finds a fault bringing first and and last in contact and traces it to the Hudson near Clinton Point post office. Gives a map of district and section showing relations at fault line.

DWIGHT (W. B.)—Continued.

—— The peculiar structure of Clark's clay beds near Newburgh, N. Y.

Vassar Brothers Inst. Trans. vol. 3, pp. 86–97. Describes the clays of the Hudson Valley. Gives an account and figures of clay filled pot-holes in faulted block of sand near Clark's Dock Station.

—— See, also, **Ford** (S. F.) and **Dwight** (W. B.).

E.

EAKINS (L. G.). See **Cross** (Whitman).

Earthquakes, Cope, Newberry, Powell.

ELDRIDGE (George H.). Montana coal fields.

Tenth Census: Report on the Mining Industries of the United States, pp. 739–759.

Detailed descriptions of the various coal beds and the structural and stratigraphic relations of the associated formations.

ELLS (R. W.). On the geological formations of Eastern Albert and Westmoreland Counties, N. B., and of portions of Cumberland and Colchester Counties, N. S.

Annual Report of the Geol. Survey of Canada, vol. 1, n. s. E, p. 66 and map.

Issued separately in 1885.

EMERSON (B. K.). Holyoke trap range.

[Read to American Association, 1886.]

Brief abstracts in Am. Jour. Sci. III, vol. 32, pp. 323–324, and Am. Ass. Adv. Sci. Proc. vol. 35, pp. 233–234.

EMERSON (B. K.)—Continued.

Describes structure, volcanic phenomena, and petrography of the district.

—— Preliminary note on the succession of the crystalline rocks and their various degrees of metamorphism in the Connecticut River region.

Am. Ass. Adv. Sci. Proc. vol. 35, p. 231.

"A comparison of the Bernardston fossiliferous section with the successive bands of the same series eastward where the metamorphism gradually increases."

—— The age and cause of the gorges cut through the trap ridges by the Connecticut and its tributaries.

Am. Ass. Adv. Sci. Proc. vol. 35, p. 232.

"The gorges were cut by the preglacial drainage and the streams were restored to their old course by the position of their deltas."

EMMONS (S. F.). The genesis of certain ore deposits.

Am. Inst. Mining Eng. Trans. pp. 22, 1886.

Erosion, King.

F.

FALDING (F. J.). Notes on Canadian fluor-apatite or fluor-phosphate of lime.

Eng. and Mining Jour. vol. 42, pp. 383–384, 403–404.

Describes some features of the rocks in which the mineral occurs.

Fault and fall line of Atlantic coastal plain, Cope.

Fire clay, Wellersburg, Pa., Lesley, Harden.

Florida, Nummellite limestone, Heilprin.

Florida—Continued.

west coast geology, Heilprin.

geology of, Kost.

FOERSTE (Aug. F.). The Clinton group of Ohio, with descriptions of new species.

Scientific lab. of Denison Univ. Bulletin No. 1, pp. 63–120 and pls. 13–14.

Describes structural and stratigraphic relations of the Clinton and Niagara at many localities and along several section lines.

FORD (S. W.) and **DWIGHT** (W. B.). Preliminary report upon the fossils obtained in 1885 from metamorphic limestones of the Taconic series of Emmons, at Canaan, N. Y.

Am. Jour. Sci. III, vol. 31, pp. 248-255 and pl. VII.

Description of the limestone outcrop from which the fossils were obtained.

FRAZER (Persifor). Sketch of the geology of York County, Pennsylvania.

Am. Phil. Soc. Proc. vol. 23, pp. 391-410 and map.

Gives a brief description of the formations and discusses their stratigraphic and structural relations and their equivalency and horizon.

FRAZER (P.)—Continued.

Reviews the portion of Wadsworth and Whitney's Azoic system as applied to Southeastern Pennsylvania. The paper is accompanied by a map colored in accordance with the proposed scheme of the International Congress.

—— The work of the International Congress of Geologists and of its committees, pp. 109 and pl. 8°, 1886.

FREEMAN (H. C.). The geologic distribution of natural gas.

Am. Inst. Mining Eng. Trans. Oct. 1886, pp. 3.

Discusses occurrence of gas and geologic relations of La Salle County and adjacent parts of Illinois and adjoining States.

G.

Gas,

anticlinal theory of, CHANCE, WHITE.

distribution in United States, ASHBURNER.

geologic distribution, FREEMAN.

in Ohio, ORTON.

See, also, Oil.

GEIKIE (Archibald). Class book of geology, 18+516 pp. 12°, London, 1886.

Not seen.

GEIKIE (James). Outlines of geology, pp. 484, 8°, London, 1886.

Occasional references to well known American geologic features.

Geological surveys, GILBERT.

Georgia, iron ore and coal, PORTER.

GIBSON (A. M.). Report on the Raccoon Mountain coal field.

Report on the Warrior coal field, Alabama Geological Survey, pp. 544-555.

Describes topography, stratigraphy, and structure of the district.

GILBERT (Grove Karl). An account of some new geologic wrinkles.

[Read to American Association, 1886.]

Brief abstract in Am. Jour. Sci. III, vol. 32, p. 324, and Am. Ass. Adv. Sci. Proc. vol. 35, p. 227.

Describes small, postglacial anticlines in horizontal limestones of Western New York and discusses their cause.

[——] Geological survey of the United States: geology and explorations.

Appletons' Annual Cyclopædia for 1885, pp. 401-408.

GILBERT (G. K.)—Continued.

—— Inculcation of scientific method by example.

[Address to American Society of Naturalists.]

Am. Jour. Sci. III, vol. 31, pp. 284-299, 1 pl.

Discusses the causes of deformation of basin of Lake Bonneville.

—— [Report of the division of the Great Basin.]

Fifth Annual Report of the U. S. Geological Survey, 1883-'84, pp. 30-34.

Refers to the deformation of the basin of Lake Bonneville.

—— The place of Niagara Falls in geologic history.

Abstract in Am. Ass. Adv. Sci. Proc. vol. 35, pp. 222-223, and brief abstract in Am. Jour. Sci. III, vol. 32, pp. 322-323, and Science, vol. 8, p. 205.

Discusses the tilting of the shore lines of Lakes Ontario and Erie and their glacial outlets, the birth of the Niagara River, and the rate and amount of recession of the falls.

—— The topographic features of lake shores.

Fifth Annual Report of the U. S. Geological Survey, 1883-'84, pp. 69-123.

Discusses the formation of lake shores and their topography, illustrated by the ancient lakes of the Great Basin and Lakes Superior and Michigan. Contrasts the topographic results of fluvial, glacial, and littoral deposits.

GILPIN (Edwin). The geology of Cape Breton Island, Nova Scotia.

Geol. Soc. Quart. Jour. vol. 42, pp. 515-526 and pl.

GILPIN (E.)—Continued.

Describes the various formations and their relation and structure. The paper is accompanied by a geologic map.

—— The Nova Scotia gold mines.

Am. Inst. Mining Eng. Trans. vol. 14, pp. 674–688 and map.

Discusses the age and genesis of the gold bearing rocks and describes their structure and relations to associated formations. The paper is accompanied by a geologic map of the southern half of Nova Scotia.

Glaciers, RUSSELL, ALLEN.

GRANT (C. E.). Notes on Pleistocene fossils from Anticosti.

Canadian Rec. Sci. vol. 2, pp. 44–46.

Describes some features of the clay beds in which the fossils occur and calls attention to an apparent rising of the island.

GRATACAP (L. P.). Fish remains and tracks in the Triassic rocks at Weehawken, N. J.

Am. Nat. vol. 20, pp. 243–246.

Incidentally describes the shales and sandstones at the trap contact.

H.

HAGUE (Arnold) and **IDDINGS** (Joseph P.). Notes on the volcanic rocks of the Republic of Salvador, Central America.

Am. Jour. Sci. III, vol. 32, pp. 26–31.

Describes some interesting rocks, including basalt, pyroxene-andesite, hornblende-pyroxene-andesite, hornblende-mica-andesite, dacite, and possibly rhyolite. Discusses their relation to rocks of the Sierra Nevada and Great Basin of the United States.

HARDEN (E. B.). Report on fire clay of Wellersburg coal basin.

Annual Report of the Geol. Survey of Pa. for 1885, pp. 239–249.

Description of the clay bed and its geologic relations and structure.

HARVEY (F. L.). On Anthracomartus trilobitus Scud.

Phila. Acad. Nat. Sci. Proc. vol. 16, pp. 231–232.

Incidentally describes some features of the coal fields of Northern Arkansas.

—— The minerals and rocks of Arkansas, pp. 32, 8°, Philadelphia, 1886.

Gives a general review of Arkansas geology and references to localities of rocks.

HAYDEN (Ferdinand Vandeveer). [Report on geologic studies in Montana.]

Fifth Annual Report of the U. S. Geological Survey, 1883–'84, pp. 28–30.

Notes outcrops of Cretaceous and Laramie in district studied.

HEILPRIN (Angelo). Explorations on the western coast of Florida and in the Okeechobee wilderness, with special reference to the geology and zoölogy, pp. 127 and pls. 8°, Philadelphia, 1886.

Pages 1–64 and plates not yet issued.

HEILPRIN (A.)—Continued.

Presents general summary and conclusions in regard to the geology of Florida on pp. 65–67 and gives a table showing the relations of the Atlantic and Gulf Tertiaries of the United States, pp. 127.

—— Notes on the Tertiary geology and paleontology of the Southern United States.

Phila. Acad. Nat. Sci. Proc. vol. 16, pp. 57–58.

Recognizes, from fossils, beds of Clabornian horizon in San Augustine County, Texas; the Nummulitic near Gainesville, Fla.; and the Lower Eocene in Kentucky near Paducah.

HICKS (L. E.). Some typical well sections in Nebraska.

Am. Ass. Adv. Sci. Proc. vol. 35, pp. 217–219.

Graphic sections from the Brownville, Lincoln, and St. Helena wells, with explanatory notes.

—— The Dakota group south of the Platte River in Nebraska.

Am. Ass. Adv. Sci. Proc. vol. 34, pp. 217–219.

Describes the stratigraphy, structure, fossils, and topography of the group and details of its unconformable deposition on the Permo-Carboniferous.

—— The Lincoln salt basin.

Am. Ass. Adv. Sci. Proc. vol. 35, p. 219.

Considers the salt basin the remnant of a Cretaceous sea border.

—— The Permian in Nebraska.

Am. Nat. vol. 20. pp. 881–883. Abstract in Am. Ass. Adv. Sci. Proc. vol. 35, pp. 216–217.

Considers the calcareous beds in the valley of Blue River, Gage County, of Permian age. They may be unconformable to the under-

HICKS (L. E.)—Continued.

lying Coal Measures and their contact with the overlying Cretaceous shows unconformity by erosion. About 10 per cent. of the fossils carboniferous. Thickness unknown. Discussed by Newberry, Walcott, Davis, Claypole, and H. S. Williams in Am. Jour. Sci. III, vol. 32, pp. 321–322.

HILGARD (E. W.). Dr. Otto Meyer and the Southwestern Tertiary.

Science, vol. 7, p. 11.

Discusses Meyer's theory that the Grand Gulf group overlies the Vicksburg group.

HILL (Frank A.). Description of the Wyoming Buried Valley between Pittston and Kingston.

Annual Report of the Geol. Survey of Pa. for 1885, pp. 637–647.

Description of drift deposits and evidence from bore holes.

HILL (Robert T.). Salient geologic features of Travis County, Texas.

Austin Statesman, December 15, 1886.

Describes topography and the subdivisions of the Cretaceous of the district.

HILLS (R. C.). Remarks on the occurrence of coal in the Carboniferous formation at Aspen and Greenwood Springs, Colorado.

Colorado Sci. Soc. Proc. vol. 2, pp. 25–26.

Describes thin seam of impure bituminous coal in Middle Carboniferous.

HITCHCOCK (C. H.). Geological map of the United States and part of Canada. Compiled to illustrate the scheme of coloration and nomenclature recommended by the International Geological Congress.

Am. Inst. Mining Eng. Trans. map 17 by 27 inches, explanation, pp. 24, 1886.

On the map there are left uncolored areas in California, Nevada, Idaho, and Utah. With some exceptions, the information on McGee's map is incorporated. In the explanation, previous maps are described and attention is called to the differences between them. The sources of information are given, as well as reasons for changes in the present map.

HONEYMAN (D.). Geology of Cornwallis or McNab's Island, Halifax Harbor.

Roy. Soc. Canada Trans. vol. 3, sec. 4, p. 27.

Describes the drift deposit.

HOOKER (W. A.). Notes on mining in Oaxaca.

Am. Inst. Mining Eng. Trans. pp. 8.

Briefly describes some of the geologic features of the district.

HOUTHUMB (C. A.). Aus den Oelregionen Pennsylvaniens.

Fels zum Meer, July, 1886.

HOVEY (H. C.). Niagara River, gorge and falls.

Sci. Am. Supt. vol. 22, No. 538, p. 8917.

Gives a summary of the discussion on the subject before the American Association and discusses some of the evidence.

HOWE (James Lewis). Lithographic stone from Tennessee.

Elisha Mitchell Sci. Soc. Jour. 1885–'86, pp. 144–145.

Gives analyses.

Hudson Bay district, BELL.

HULL (Edward). The geological age of the North Atlantic Ocean.

Nature, vol. 34, p. 496.

Discusses the source of the material of some of the American Paleozoic formations.

HUNT (T. Sterry). Mineral physiology and physiography. A second series of chemical and geological essays. 17, 710 pp. 8°, Boston, 1886.

Besides reprints of former papers, discusses the genetic history of crystalline rocks, the history of the pre-Cambrian rocks, and the Taconic question. Discusses recent information in regard to the rocks at the head of the Bay of Fundy, the Lake Superior district (pp. 579, 611, and 621), the Cambrian of Utah (p. 623) and of the Grand Cañon (p. 624), Texas (p. 624) and of the Taconic region (pp. 627, 629, 643, 645, and 647). On p. 591 has notes by Darton on the Green-Pond Mountain series and associated formations.

I.

Idaho, Pliocene sands, MERRILL.

IDDINGS (Joseph P.). The columnar structure in the igneous rock on Orange Mountain, New Jersey.

[Read to Philosophical Society of Washington.]

IDDINGS (J. P.)—Continued.

Am. Jour. Sci. III, vol. 31, pp. 321-331 and plate ix.

Abstract in Washington Phil. Soc. Bull. 8, pp. 19–24.

Describes exposure in which very perfect, large columns are capped by smaller ones with

IDDINGS (J. P.)—Continued.
radial structure, the plate showing the relations. Concludes that both belong to the same flow. Discusses cause of columnar structure. Describes microscopic character of the rock and considers the sheet a lava flow rather than intrusive.

—— See, also, **Hague** (Arnold).

Illinois, Quaternary, WORTHEN.
gas, FREEMAN.

Indiana, geologic map, BRANNER.

Iowa, drift, CHAMBERLIN.
Davenport, geology, BARRIS.
movement of glaciers, IRISH.

IRISH (C. W.). Movement of the glaciers of the ice period in Iowa and its vicinity.
Iowa Hist. Record, vol. 1, pp. 162–185.
Describes many features of the topography, drainage, and drift deposits.

Iron ore, Alabama, CHAUVENET.
Alabama, Georgia, and Tennessee, PORTER.
and schists of Northwest, IRVING, VAN HISE.
Connecticut and Massachusetts mines, PUTNAM.
Cornwall mines, Pennsylvania, D'INVILLIERS, LESLEY, WILLIS.
distribution in United States, PUMPELLY.
district of the Upper Mississippi, WILLIS.
Kentucky mines, CHAUVENET.
magnetites of Eastern Pennsylvania, WILLIS.
Maryland, BENTON.
Michigan and Northern Wisconsin, PUTNAM, WILLIS.
Missouri, CHAUVENET.
New Jersey, PUTNAM.

Iron—Continued.
New York, PUTNAM.
Northern New England, BENTON.
North Carolina, WILLIS.
Ohio, WILLIS.
Pennsylvania, PUTNAM, WILLIS.
pyrites, deposits of the Alleghanies, WENDT.
Tennessee, CHAUVENET, WILLIS.
Tilly Foster mine, RUTTMAN.
United States, VOGDES, PUMPELLY.
Virginia, CHAUVENET.
Wallbridge, Canada, CHAPMAN.
west of the one hundredth meridian, PUTNAM.
Wyoming, AUGHEY.

IRVING (R. D.). Origin of the ferruginous schists and iron ores of the Lake Superior region.
Am. Jour. Sci. III, vol. 32, pp. 255–272.
Discusses the various theories and the general question of metamorphism. Describes the general features and petrography of the iron bearing formations of the region and deduces therefrom a theory to account for the origin of the ores.

—— Preliminary paper on an investigation of the Archean formations of the Northwestern States.
Fifth Annual Report of the U. S. Geological Survey, 1883–'84, pp. 175–242 and pl.
Gives a general account of the problems to be attacked, a description of areas of Huronian and supposed Huronian age, and a preliminary geologic map. Describes the petrography and discusses the evidence of enlargements of mineral fragments in certain detrital rocks of the region, and metamorphism in the Huronian.

—— Törnebohm on the formation of quartzite by enlargement of the quartz fragments of sandstone.
Am. Jour. Sci. III, vol. 31, pp. 225–226

J.

JAMES (Joseph F.). The geology of Cincinnati.
Cincinnati Soc. Nat. Hist. Jour. vol. 9, pp. 20–31, 136–141.
Describes the rock formations and drift ter-

ıcture, CROSBY.

JUKES-BROWN (A. J.). The student's hand book of historical geology, pp. 12, 597, 12°, New York, 1886.
Not seen.

JULIEN (A. A.). [Remarks on the thin bedded gneiss border of the Adirondack region.]
N. Y. Acad. Sci. Trans. vol. 5, p. 72.

K.

Kansas, notes on gypsum deposits, CRAGIN.

Kaolin, Brandywine Summit, Delaware County, Pa., ASHBURNER.
Chester and Delaware County, Pa., LESLEY.

Kentucky, iron mines, CHAUVENET.
Lower Eocene, HEILPRIN.
trap rocks of Eastern, CRANDALL, DILLER.

KINAHAN (G. H.). Note on the coal deposits of the northwest territories of Canada.

Dublin Roy. Geol. Soc. Jour. vol. 6, pp. 275-287.
Not seen.

KING (F. H.). Internal chemical and mechanical erosion a factor in continent and mountain building.

Am. Nat. vol. 20, pp. 53-57.
Discusses the possibilities of underground chemical solution decreasing the strength and amount of solid matter in continents and the results.

KOST (J.). Geology of Florida.

Am. Ass. Adv. Sci. Proc. vol. 35, p. 231.
Brief abstract of general description.

KÜCH (R.). Petrographische Mittheilungen aus den südamericanischen Anden.

Neues Jahrbuch, Band I, pp. 35-48, 1886.
On rhombic pyroxene in andesites and its determination; describes quartz-pyroxene-andesite of Cumbal and dacite-pearlite from Loma de Ales and gives chemical analyses.

L.

Lake Bonneville, GILBERT.
Lake Lahontan, RUSSELL.
Lake shores, topography, GILBERT.
Lake Superior, glacial action on shores, CROSIER.
Lake Superior copper mines, WHEELER.

LAMPLUGH (G. W.). On glacial shell beds in British Columbia.

Geol. Soc. Quart. Jour. vol. 42, pp. 276-286.
Describes beds of Vancouver Island and in valley of Fraser River. Discusses time of deposition.

—— On ice grooved rock surfaces near Victoria, Vancouver Island; with notes on the glacial phenomena of the neighboring region and on the Muir glacier of Alaska.

Yorkshire Geol. and Poly. Soc. Proc. vol. 9, n. s. pp. 57-70.

LANGDON (D. W.). Observations on the Tertiary of Mississippi and Alabama, with description of new species.

Am. Jour. Sci. III, vol. 31, pp. 202-209.
Describes sections along Pearl River from Jackson to Yazoo City; dips in the main southward. The Jackson beds underlie the Vicksburg and Orbitoides Limestone. The Alabama prairies supposed to be underlaid by Tuomey's White Limestone. Describes sections at St. Stephens Bluff, Bladen's Springs, near Enterprise, west of Meridian, and near Claiborne.

LAWSON (A. C.). On the geology of the Lake of the Woods region, with special reference to the Keewatin (Huronian?) belt of the Archean rocks.

Annual Report of Geol. Survey of Canada vol. 1, n. s. CC, p. 141.
Issued separately in 1885.

—— Some instances of gneissic foliation and schistose cleavage in dikes and their bearing upon the problem of the origin of the Archean rocks.

Canadian Inst. Proc. vol. 32, pp. 115-128.
Discusses foliation and metamorphism. Describes and figures instances of foliation in dikes at various West Canadian localities.

LE CONTE (Joseph). A post-Tertiary elevation of the Sierra Nevada shown by the river beds.

[Presented to the National Academy of Sciences.]
Am. Jour. Sci. III, vol. 32, pp. 167-181.
Discusses the effect of orographic movements on drainage. Calls attention to some features of the history of Colorado and Mississippi Rivers. Describes river beds of parts of California. Discusses some structural features of the Great Basin, the relation of the post-Tertiary movements to the great lava flood and to the great fissures and normal faults of the West, the contemporaneous elevation of the west side of South America and subsidence of the

LE CONTE (J.)—Continued.

mid-Pacific bottom, and the cause of the movements. In conclusion, makes an estimate of the amount of elevation and erosion.

—— Compend of geology, 12°, New York, 1886.

—— On the permanence of continents and ocean basins, with special reference to the formation and development of the North American continent.

Geol. Mag. n. s. vol. 3, pp. 97-101.

Discusses relation of land and sea areas in Archean and in lower Silurian times and the source of sediments of the formations.

LESLEY (J. P.). Annual report of the geological survey of Pennsylvania for 1885, pp. 769, 18 pl. and atlas of maps, 8°, Harrisburg, 1886.

Administrative report and history of the survey. Geological papers by Carll, Lesquereux, D'Invilliers, Lesley, Ashburner, Linn, Linton, Harden, and Hill, and paper on the geodetic survey of the State by Merriman.

—— Dr. Orton's Ohio gas and oil report.

Science, vol. 8, pp. 233-235.

Discusses the formation of petroleum, cavernous limestones, underground drainage and erosion, and the cause and age of the Cincinnati uplift. Describes some features of difference between the geology of Pennsylvania and Ohio.

—— Some general considerations of the pressure, quantity, composition, and fuel value of rock gas or the natural gas of the oil regions of Pennsylvania.

Annual Report of the Geological Survey of Pa. for the year 1885, pp. 657-680.

Discusses movement of fragmental material of rocks due to underground erosion and porosity, the resulting pressure and its relation to the pressure under which oil and gas are found. Calls attention to areas of the State that are barren of oil and gas and to those likely to yield them.

—— Some general considerations respecting the origin and distribution of the Delaware and Chester kaolin deposits.

Annual Report of the Geol. Survey of Pa. for 1885, pp. 571-591 and map.

Discusses strike and linear extent of crystalline rocks of the district. Calls attention to parallelism of strike of kaolin and limestones, some of which are thought to be altered Lower Silurian. Advances the hypothesis that decomposition of gneisses &c. is greatly increased by solutions from adjacent limestones &c., and that this has been the cause of the deep decomposition at the Hoosac tunnel, in parts of the Southern Atlantic States, and elsewhere. Discusses the origin of kaolin, of the cretaceous clays of the coastal plain, and the relation of rock decay to structure, texture, and composisition.

LESLEY (J. P.)—Continued.

—— The coal beds and fire clays of the Wellersburg basin in Somerset County.

Annual Report of the Geol. Survey of Pa. for 1885, pp. 227-229.

Describes the geology and structure of the district and discusses the horizon of some of the beds.

—— The geology of the Pittsburgh coal region.

Am. Inst. Mining Eng. Trans. pp. 39.

Describes the coal beds of Western Pennsylvania and westward; discusses their former extent, the gap between the Carboniferous and Trias in Pennsylvania, the horizon and extension of various Carboniferous beds, the Devonian beds and oil sands, and the structure of bituminous district.

—— and **D'INVILLIERS** (E.V.). Report on Cornwall iron ore mines, Lebanon County.

Annual Report of the Geol. Survey of Pa. for 1885, pp. 491-570 and map.

Describes the geology in detail. Discusses the means and mode of intrusion of the trap, the relation of the ore beds and Mesozoic, the genesis of the ore, and the age and relations of the associated slates. In a supplementary note Lesley calls attention to the similarity of Cornwall and Dillsburg deposits. The paper is illustrated by heliotypes of outcrops and of two relief models, and by maps.

LESQUEREUX (Leo). On the vegetable origin of coal.

Annual Report of the Geol. Survey of Pa. for 1885, pp. 95-121.

Discussion of theories on the subject.

LEWIS (H. Carvill). Some examples of pressure fluxion in Pennsylvania.

British Ass. Rep. for 1885, pp. 1029-1030.

States his opinion that the belt of Laurentian rocks of Southeastern Pennsylvania are of eruptive origin, consisting of highly metamorphosed syenites, acid gabbros, trap granulites, &c.

—— Comparative studies upon the glaciation of North America, Great Britain, and Ireland.

[Read to British Association, Sept. 1886.]

Am. Nat. vol. 20, pp. 919-927, and Nature, vol. 35, pp. 89.

Refers to some well known phenomena of American glaciation.

LILLEY (A. T.). A revision of the section of Chemung rock exposed in the Gulf Brook gorge at Le Roy, Bradford County, Pennsylvania.

Am. Phil. Soc. Proc. vol. 23, pp. 291.

LINDGREN (Waldemar). Eruptive rocks [of Montana coal districts].

Tenth Census: Report on the Mining Industries of the United States, pp. 719-737.

General descriptions of the occurrence of the eruptive rocks of South-Central Montana and of their lithologic characters.

LINN (Alonzo) and **LINTON** (Edward). Notes on the mountain limestone (at the base of No. XI) in the Washington County gas wells.

Annual Report of the Geol. Survey of Pa. for 1885, pp. 222-226.

LINN (A.) and **LINTON** (E.)—Cont'd.

Description of lithology of the beds and their stratigraphic position. Supplementary note by J. P. Lesley on the stratigraphy and mode of deposition.

LINTON (Edward). See **LINN** (Alonzo).

Long Island, N. Y., geology, MERRILL.

LOW (A. P). On the Mistassini expedition.

Annual Report of the Geol. Survey of Canada, vol. 1, n. s. D, p. 46, and map.

Describes and maps distribution of Laurentian, Huronian, Cambrian, and superficial formations, giving an account of their general stratigraphy and structural relations.

Lower Silurian. See **Silurian, Lower**.

M.

McCALLEY (Henry). On the Warrior coal field.

Geological Survey of Alabama, pp. 571, 8°, 1886.

After a preliminary general description, the topography, stratigraphy, and structure of the coal counties are described in detail.

McCONNELL (R. G.). On the Cypress Hills, Wood Mountain, and adjacent country.

Annual Report of the Geol. Survey of Canada, vol. 1, n. s. C, p. 76 and two maps.

Issued separately in 1885.

McDOUGALL. Shells in sand at Selkirk.

Canadian Inst. Proc. vol. 21, p. 270.

Refers to their relation to the glacial drift.

McGEE (W J). Geography and topography of the head of Chesapeake Bay.

[Read to American Association, 1886.]

Brief abstract in Am. Jour. Sci. III, vol. 32, p. 323.

Describes the drainage and topographic features.

—— Map of the United States, exhibiting the present status of knowledge relating to the areal distribution of geologic groups. (Preliminary compilation.)

Fifth Annual Report of the U. S. Geological Survey, 1883-'84.

In pocket. Explanation, pp. 34-37. Map also published with legend in French.

The areas left uncolored are California, Oregon, the greater part of New Mexico, Washington Territory, Idaho, and Nevada, and a part of Arizona, Montana, and Texas.

McGEE (W J)—Continued.

—— [Notes on the geology of Washington and vicinity.]

Report of the Health Officer of the District of Columbia for 1884-'85, pp. 19-21, 23, 24, 25.

Describes the composition and distribution of the Columbia and the underlying Potomac formations and some features of the crystalline rocks.

Maine, geology of Cobscook Bay, SHALER.
wind action, STONE.

MARCOU (Jules). On two plates of stratigraphical sections of the Taconic ranges, by James Hall.

Science, vol. 7, pp. 393-394.

Calls attention to the extensive distribution of the sections referred to.

MARSH (O. C.). The gigantic mammals of the order Dinocerata.

Fifth Annual Report of the U. S. Geological Survey, 1883-'84, pp. 243-302.

Describes the Eocene deposits of Wyoming in which the remains are found and gives a brief review of the Tertiary geology of the West.

MARTIN (D. S.). [Remarks on the tide water gneisses.]

N. Y. Acad. Sci. Trans. vol. 5, pp. 19-20.

Calls attention to the lithologic differences between the gneisses of the highlands of New Jersey and New York and those of Manhattan Island, Philadelphia, &c.

Maryland, Chesapeake Bay, head of, McGEE.
gabbros &c. near Baltimore, WILLIAMS.
iron mines, BENTON.

Massachusetts, cutting of gorges through trap ridges, EMERSON.
Holyoke trap, EMERSON.
iron mines, PUTNAM.
metamorphism of crystalline rocks, EMERSON.
Trias, DAVIS.
Upper Silurian, DALE, EMERSON.

MATTHEW (G. F.). [Sketch of geology of Frye's Island.]

New Brunswick Nat. Hist. Soc. Bull. No. 5, p. 38.

States that he had recognized the same succession of Silurian strata as is found on the Mascarene shore of Passamaquoddy Bay and that the belt of red conglomerate extending from Black's Harbor toward Eastport is Devonian.

MERRILL (F. J. H.). Geology of Long Island.

N. Y. Acad. Sci. Annals, vol. 3, pp. 341-364 and map

Describes topography and the relation and structure of the glacial and preglacial clays, sands, &c. Discusses the age and mode of deposition of the beds, condition of Long Island Sound during the glacial period, and subsidence of the coast line. The paper is accompanied by a map of the island and plate of sections.

—— [Observations on the recent formations of the Atlantic Coast of New Jersey.]

Annual Report of the State Geologist [of N. J.] for 1885, pp. 61-95.

Describes salt marshes, beaches, terraces, and alluvial deposits in general; discusses the subsidence of the coast, the formation of marshes, and change of form of the beaches due to tide and wind action.

—— On some dynamic effects of the ice sheet.

[Read to American Association, 1886.]

Brief abstract in Am. Jour. Sci. III, vol. 32, p. 324, and in Am. Ass. Adv. Sci. Proc. vol. 35, pp. 228-229.

Describes distortion of Cretaceous and Tertiary beds on Long Island, N. Y., and Southern New England. Calls attention to anticlinal deformation as the partial cause of the height of some morainal ridges and as accounting for position of certain post-Pliocene beds.

MERRILL (George P.). Notes on the composition of certain "Pliocene sandstones" from Montana and Idaho.

MERRILL (G. P.)—Continued.

Am. Jour. Sci. III, vol. 32, pp. 199-204.

Finds them to be composed in greater part of fragmental volcanic products. Describes other similar rocks from Kansas and Colorado.

MERRITT (W. H.). The Cascade anthracite coal fields of the Rocky Mountains, Canada.

Geol. Soc. Quart. Jour. vol. 42, pp. 560-564.

Describes and figures stratigraphy, structure, and relation to associated formations of Cretaceous coal beds of Bow River Valley.

Mexico, fossil man, BARCENA.
coal deposits, COPE.
mining in Oaxaca, HOOKER.

MEYER (Otto). Observations on the Tertiary and Grand Gulf [groups] of Mississippi.

Am. Jour. Sci. III, vol. 32, pp. 20-25.

Describes an unsuccessful attempt to find Grand Gulf and Tertiary beds in contact. Describes the relation of the greensands south of Enterprise and the relations near Jackson. Concludes that the Grand Gulf group is older than the marine Tertiary, was dry land when the latter was deposited, and was not a marine deposit. Calls attention to an extensive marine greensand in Eastern Mississippi at a horizon immediately below the Claiborne.

Michigan, Archean, IRVING.
iron mines, PUTNAM.

Minnesota, Archean, IRVING.
deep wells, WINCHELL.
geologic survey report, WINCHELL.
iron ore districts, WILLIS.
Lower Silurian, ULRICH.
revision of Cambrian, WINCHELL.

Mississippi, Tertiary, ALDRICH, LANGDON, HILGARD, MEYER.

Missouri, iron mines, CHAUVENET.

Mistassini expedition, LOW.

MONRO (Alex.). On the physical features and geology of Chignecto Isthmus.

New Brunswick Nat. Hist. Soc. Bulletin No. 5, pp. 20-24.

Describes some topographic feature and superficial formations; calls attention to subsidence of the land.

Montana, Cretaceous and Laramie, HAYDEN.
Pliocene sands, MERRILL, PEALE.
coals and geology, DAVIS.
coals, ELDRIDGE.
eruptive rocks, LINDGREN.

N.

Nebraska, Dakota group, HICKS.
drift, CHAMBERLIN.
Lincoln salt basin, HICKS.
Permian in, HICKS.
Quaternary volcanic sand, TODD.
well sections, HICKS.

Nevada, argentiferous lead mines, SIX.
Lake Lahontan, RUSSELL.
Washoe rocks, BECKER.

NEWBERRY (John S.). Earthquakes.

Columbia Coll. School of Mines Quarterly, vol. 8, pp. 1-19.

Incidentally discusses earthquakes and volcanoes as measures of thickness of the earth's crust.

—— North America in the ice period.

Popular Science Monthly, vol. 30, pp. 1-10 and pl.

Describes in general the glacial features of North America and discusses the iceberg theory and glacial climate.

—— Notes on the geology and botany of the country bordering on the Northern Pacific Railroad.

N. Y. Acad. Sci. Annals, vol. 3, pp. 242-270.

Besides mentioning many geologic features along the railroad, describes drift of Yellowstone Park and the Upper Missouri, the geology of the Belt Mountain district, the present and former glaciers of the Cascade Range, and the geology of the Puget Sound basin.

—— On the American Trias.

N. Y. Acad. Sci. Trans. vol. 5, pp. 18-19.

Discusses the equivalency of American and European beds. States his opinion of the probable Archean age of the crystalline rocks forming the eastern border of the Trias in New Jersey and Pennsylvania.

—— [Review of Hull on the "Geological age of the Atlantic Ocean."]

N. Y. Acad. Sci. Trans. vol. 5, pp. 78-79.

Opposes the statements in regard to the derivation of the materials of the American Paleozoic.

—— The Cretaceous flora of North America.

N. Y. Acad. Sci. Trans. vol. 5, pp. 133-137.

Gives a table showing relative positions of the plant bearing members of the Cretaceous of North America and Europe.

New Brunswick, Cambrian, BAILEY.
Chignecto Isthmus, MONRO.
Frye's Island, MATTHEW.

New Brunswick—Continued.
geologic studies, BAILEY.
geology of part of, ELLS.
surface geology, CHALMERS.

New England iron mines, PUTNAM, BENTON.
Upper Silurian, DALE.
See, also, **Massachusetts**.

New Hampshire, Upper Silurian, DALE.

New Jersey, Archean, BRITTON.
coast formations, COOK, MERRILL.
Cretaceous fauna, WHITFIELD.
Cretaceous and Tertiary, COOK, BRITTON.
fish remains, GRATACAP.
geologic report for 1885, COOK.
iron mines, PUTNAM.
Orange trap columns, IDDINGS.
Upper Silurian, DARTON.

New York, fire sand of Clinton County, BRAINERD.
fossiliferous limestone of Columbia County, BISHOP.
fossils at Canaan, DANA, DWIGHT, FORD.
geologic succession in Ontario County, CLARKE.
geologic wrinkles, GILBERT.
iron mines, PUTNAM.
Long Island, geology, MERRILL.
Lower Helderberg, Cayuga County, WILLIAMS.
Lower Helderberg, Cornwall Station, DARTON.
Niagara Falls recession, WOODWARD, GILBERT.
Niagara River, gorge and falls, HOVEY, CLAYPOLE, POHLMAN.
Onondaga salt group at Buffalo, POHLMAN.
Orange County, geology, DARTON.
peridotites near Peekskill, WILLIAMS.
place of Niagara Falls in geologic history, GILBERT.
Potsdam near Poughkeepsie, DWIGHT.
Quaternary deformation, GILBERT, MERRILL.
revision of Devonian section at Cayuga Lake, WILLIAMS.
salt mine, WRIGHT.

New York—Continued.
schistose rocks of Adirondacks, BRITTON, JULIEN.
Staten Island, geology, BRITTON.
structure of clay near Newburgh, DWIGHT.
Tilly Foster Mine, geology, RUTTMAN.
Trenton fossils of Orange County, DARTON.
Tully limestone, WILLIAMS.
Washington County, Cambrian age of slates at Granville, WALCOTT.
westward extension of the Lower Helderberg, WILLIAMS.

Niagara Falls. See **New York.**

North America, age of Olenellus zones, BRÖGGER.

North Carolina, iron mines, WILLIS.

Northern Pacific Railroad, geology along, NEWBERRY.

Nova Scotia, Cornwallis or McNab Island, HONEYMAN.
geologic formations, ELLS.
geology of Cape Breton Island, GILPIN.
gold mines, GILPIN.
Sydney coal field, ROUTLEDGE.

O.

Ohio, geology of Cincinnati, JAMES.
Clinton group, FOERSTE.
coal field, ORTON.
coals, characteristics of, ORTON.
deep well, ORTON.
iron mines, WILLIS.
oil and gas, ORTON.
Orton's oil and gas report, LESLEY.

Oil and gas, of Ohio, ORTON.
Orton's report on, LESLEY.
borings in Pennsylvania, ASHBURNER.
Pennsylvania, CARLL, HOUTHUMB.
pressure, quantity, &c. of Pennsylvania, LESLEY.
Wyoming, AUGHEY.

Orange sands. See **Quaternary.**

ORTON (Edward). Address to the section of geology and geography.

Am. Ass. Adv. Sci. Proc. vol. 34, pp. 173–197.
Discusses recent progress of some branches of American geology. Reviews the literature on the formation of coal. Describes the Ohio coal field and discusses the origin of the beds of coal and associated rocks, applying the conclusions to other areas.

—— Characteristics of Ohio coals.

Tenth Census: Report on the Mining Industries of the United States, pp. 619–622.

—— Geological survey of Ohio: Preliminary report upon petroleum and inflammable gas, pp. 76, 8°, 2 maps, Columbus, 1886.

Discusses the mode of occurrence and origin of oil and gas; gives a general account of the geology of Ohio and a map; describes the oil fields and the occurrence of oil and gas in the Trenton, in the Berea grit, in the Ohio shales, and in the other formations.

—— Petroleum and natural gas in Ohio.

Science, vol. 7, pp. 560–564 and map.
Describes some geologic features of the district and the rocks passed through in drilling. The paper is accompanied by a geologic map of Ohio.

—— The recently discovered sources of natural gas and petroleum in Northwestern Ohio.

Am. Ass. Adv. Sci. Proc. vol. 34, pp. 202–204.
Describes the geology of the district and the age of the beds passed through in drilling. Calls attention to the relation of the new oil district to the Cincinnati uplift.

—— The record of the deep well of the Cleveland Rolling Mill Company, Cleveland, Ohio.

Am. Ass. Adv. Sci. Proc. vol. 34, pp. 220–222.
Gives the record of a well begun in Bedford shales and extending down into the Trenton Limestone. Discusses the identity of intermediate beds.

P.

PACKARD (A. S.). Geological extinction and some of its apparent causes.

Am. Nat. vol. 20, pp. 29-40.

PANTON (J. Hoges). Notes on the geology of some islands in Lake Winnipeg.

Hist. and Sci. Soc. of Manitoba Trans. No. 20, pp. 10.

Describes the crystalline rocks, the Silurian formations and fauna, the drift, and evidences of glaciation.

Paraguay, stones from, POHLMANN.

PEALE (A. C.). Lacustrine deposits of Montana.

Science, vol. 8, pp. 163-164.

Describes the general features of the deposits and calls attention to Merrill's discovery that they are in part composed of volcanic dust.

Pennsylvania, anthracite coal region, ASHBURNER.
Archbald pot-holes, ASHBURNER.
Bradford County, Chemung section, LILLEY.
Chester and Delaware kaolin, LESLEY.
Cornwall iron mines, LESLEY, D'INVILLIERS, WILLIS.
gas, ASHBURNER, CARLL, CHANCE, WHITE.
glaciation, BRANNER.
ice of Northeastern, BRANNER.
iron ores, PUTNAM.
kaolin of Brandywine Summit, ASHBURNER.
magnetites of Eastern, WILLIS.
Montgomery County, geology, CARTER.
oil borings, ASHBURNER.
oil region, HOUTHUMB, CARLL.
Oriskany in Lycoming County, WOOLMAN.
Pittsburgh coal, LESLEY, D'INVILLIERS.
pressure fluxion, LEWIS.
pressure, quantity, &c. of gas, LESLEY.
railroad cut at Gray's Ferry road, SMITH.
report on oil, CARLL.

Pennsylvania—Continued.
report of State geologist, 1885, LESLEY.
Tipton Run coal, ASHBURNER.
Washington County, mountain limestone, LINN.
Wellersburg, fire clay, LESLEY, HARDEN.
Wyoming Buried Valley, HILL, ASHBURNER.
Wyoming Valley limestone, ASHBURNER.
York County, geology, FRAZER.

Penokee-Gogebic series, VAN HISE.

Permian, in Nebraska, HICKS.

Petrography, Archean of Northwest, IRVING.
Delaware gabbros &c., CHESTER.
gabbros &c. near Baltimore, WILLIAMS.
Holyoke, Mass., trap, EMERSON.
Montana eruptives, LINDGREN.
Penokee-Gogebic rocks, VAN HISE.
peridotites near Peekskill, N. Y., WILLIAMS.
rocks of Andes, KÜCH, POHLMANN.
rhyolite, CROSS.

POHLMAN (Julius). The thickness of the Onondaga salt group at Buffalo.

Buffalo Soc. Nat. Sci. Bull. vol. 5, pp. 97-98.

Determined from a well boring 1,305 feet in depth, which passed through gypsiferous beds down to 725 feet, then through soft, red shales holding a bed of sandstone near their top.

—— The Niagara gorge.

Am. Ass. Adv. Sci. Proc. vol. 35, pp. 221-222.

Discusses details of the ancient drainage of the Niagara Falls district and the origin and work of the Niagara River.

POHLMANN (Robert). Gesteine aus Paraguay.

Neues Jahrbuch, Band I, pp. 244-248, 1886.

Describes muscovite-gneiss, biotite-gneiss, muscovite-mica-schist, quartzite, sandstone, oölite-limestones, olivine-kersantite, and nepheline-basalt.

PORTER (John B.). The iron ores and coals of Alabama, Georgia, and Tennessee.

PORTER (J. B.)—Continued.

Am. Inst. Mining Eng. Trans. p. 49 and map.

Describes occurrence of iron ores and coals and the structure and geology of the region.

POWELL (J. W.). The cause of earthquakes.

The Forum, vol. 2, pp. 370-391.

Gives instances of formation of sedimentary deposits. Explains faults and flexures. Discusses changes of shore lines, internal heat of the earth, crustal stresses, earthquakes known to have been produced by faulting, relation of volcanic activity to earthquakes, relation of geology to seismology, vertical range of earthquakes, and the condition of the interior of the earth and of its crust.

PRESTWICH (Joseph). Geology, chemical, physical, and stratigraphical. Vol. 1, Chemical and physical, 24+477 pp. 8°, Oxford, 1886.

Thinks that the Cañon of the Colorado may be due to a fissure widened by erosion. Quotes descriptions of various instances of geologic phenomena in the United States, especially in the West.

PRIME (Frederick, *jr.*). The coals of the United States.

Tenth Census: Report on the Mining Industries of the United States, pp. 605-617.

Brief general description of the location and character of the coal districts.

PUMPELLY (Raphael). Bituminous coals and lignites of the Northwest.

Tenth Census: Report on the Mining Industries of the United States, pp. 690-695 and map.

General description and notice of deposits.

—— Geographical and geological distribution of the iron ores of the United States.

Tenth Census: Report on the Mining Industries of the United States, pp. 3-36 and plates.

PUMPELLY (R.)—Continued.

General geologic description of the various ore regions and some features of their structure.

PUTNAM (Bayard T.). Notes on the samples of iron ore collected in Connecticut and Massachusetts.

Tenth Census: Report on the Mining Industries of the United States, pp. 83-87.

Describes some features of the formations in which the ore occurs.

—— Notes on the samples of iron ore collected in Michigan and Northern Wisconsin.

Tenth Census: Report on the Mining Industries of the United States, pp. 421-455.

General description of the geology of the ore districts.

—— Notes on samples of iron ore collected in New Jersey.

Tenth Census: Report on the Mining Industries of the United States, pp. 145-177.

Describes some features of the formations in which the ores occur.

—— Notes on the samples of iron ore collected in New York.

Tenth Census: Report on the Mining Industries of the United States, pp. 89-144.

Description of the geologic relations and structural features of the mines.

—— Notes on the iron ores of Pennsylvania.

Tenth Census: Report on the Mining Industries of the United States, pp. 179-221.

Occasional notice of geologic features of formations in which the ores occur.

—— Notes on the samples of iron ore collected west of the one hundredth meridian.

Tenth Census: Report on the Mining Industries of the United States, pp. 469-505.

Description of the ore beds and the associated formations in Colorado, Wyoming, Utah, California, and Oregon.

Q.

Quaternary, Alaska, ALLEN.
  along Northern Pacific Railroad, NEWBERRY.
  Archbald pot-holes, Pa., ASHBURNER.
  British Columbia, LAMPLUGH.
  Buried Valley of Newport Creek, Pa., ASHBURNER, HILL.

Quaternary—Continued.
  clay structure near Newburgh, DWIGHT.
  Cornwallis Island, Halifax, HONEYMAN.
  drift, COOPER, SALISBURY.
  drift inventory, CHAMBERLIN.

Quaternary — Continued.

drift of Lower St. Lawrence, DAWSON.

dynamic effects of ice sheet, MERRILL.

elevation of Sierra Nevada, LE CONTE.

Florida, west coast, HEILPRIN.

glacial action, shore of Lake Superior, CROSIER.

glaciation of America and Europe, LEWIS.

glaciation of Wyoming and Lackawanna Valley, Pa., BRANNER.

Gray's Ferry road, near Philadelphia, Pa., SMITH.

Great Basin, GILBERT.

ice of Northeastern Pennsylvania, BRANNER.

Quaternary — Continued.

Illinois, WORTHEN.

Lake Bonneville, GILBERT.

Lake Lahontan, RUSSELL.

Long Island, New York, MERRILL.

movement of glaciers in Iowa, IRISH.

New Jersey coast, COOK, MERRILL.

Niagara Falls, CLAYPOLE, HOVEY, GILBERT, POHLMAN, WOODWARD.

North America in ice period, NEWBERRY.

Northwest prairies, DRUMMOND.

on islands of Lake Winnipeg, PANTON.

Rocky Mountain drift, COMSTOCK.

Selkirk, Canada, MCDOUGALL.

Staten Island, N. Y., BRITTON.

volcanic deposits of Nebraska, TODD.

R.

RATH (G. vom). Berichte über die Umgebungen von San Francisco, Santa Cruz und Neu Almaden, Californien.

Vorträge und Mittheilungen, 1886.
Not seen.

—— Geologische Wahrnehmungen in Californien längs der Central-Pacific-Eisenbahn und in dem Goldgebiete von Dutch Flat, Placer Co.

Vorträge und Mittheilungen, 1886.
Not seen.

——Wahrnehmungen auf einer Reise durch einen Theil des südlichen Californiens sowie in den angrenzenden Gebirgen Arizonas.

Vorträge und Mittheilungen, 1886.
Not seen.

—— Wahrnehmungen in der Umgebung von Silver Cliff, Salida, Leadville und Gunnison, Colorado.

Vorträge und Mittheilungen, 1886.
Not seen.

READE (T. Mellard). The origin of mountain ranges, considered experimentally, structurally, dynamically, and in relation to geological history, pp. 359, pl. 42, 8°, London, 1886.

REYER (E.). Zwei Profile durch die Sierra Nevada.

Neues Jahrbuch, Beil.-Band IV. Heft2, pp. 291-326 and map.

(1) Mariposa to Mono; (2) Nevada City to Reno.

Describes the geologic features along these belts and discusses the stratigraphy and structural relations and volcanism. The paper is accompanied by a geologic map of the belts and numerous illustrations of structure.

RICE (William North). On the Trap and sandstone in the gorge of the river at Tariffville, Conn.

Am. Jour. Sci. III, vol. 32, pp. 430-433.

Describes the relation of the two sheets of trap exposed in section at point.

RICHARDS (Ellen H.). First lessons in minerals, pp. 46-120, 12°, Boston, 1886.
[Guides for Science Teaching.]

ROUTLEDGE (W.). The Sydney coal field, Cape Breton, N. S.

Am. Inst. Mining Eng. Trans. vol. 14, pp. 542-560.

Describes some of its geologic features.

RUSSELL (Israel C.). Existing glaciers of the United States.

Fifth Annual Report of the U. S. Geological Survey, 1883-'84, pp. 303-356, 14 pls.

Discusses the nature of a glacier and glacial action. Describes glaciers of the Sierra

RUSSELL (I. C.)—Continued.

Nevada and evidences of their former occurrence and extent. Quotes descriptions of glaciers of Northern California and the Cascade Mountains, permanent ice on mountains in the Great Basin, glaciers in the Rocky Mountains and in Alaska. The paper is illustrated with numerous cuts taken from photographs and with several maps.

—— Geological history of Lake Lahontan, a Quaternary lake of Northwestern Nevada. U. S. Geol. Surv. Monograph, No. 11, pp. 288, pls. 45, map, Washington, 1885.

After a preliminary description of the Great Basin and its exploration and a discussion of lacustral basins in general, the physiography of the Lahontan basin is described in detail, shore phenomena in general are discussed, and the shore phenomena, sediments, &c. of Lake Lahontan described. The chemistry of natural waters precedes a description of the chemic deposits of Lake Lahontan and a discussion of their formation, relations, fauna, and geologic age. In conclusion Quaternary climate is discussed and recent faults are described. The paper is illustrated by many plates from photographs and by maps and figures in the text and a folded map in a pocket.

RUTTMAN (Ferd. S.). Notes on the geology of the Tilly Foster mine.

Am. Inst. Mining Eng. Trans.

Describes and figures the ore body and fault and discusses origin of ore.

S.

SALISBURY (R. D.). Notes on the dispersion of drift copper.

Wisconsin Acad. Sci. &c. Trans. vol. 6, pp. 42-50 and pl.

Accompanied by a map showing areas in which drift copper has been found.

SELWYN (Alfred R. C.). Geological and natural history survey of Canada, annual report, n. s., vol. 1, 1885, 8°, pp. 733, and maps, Montreal, 1886.

Administrative report and papers by G. W. Dawson, McConnell, Lawson, Low, Bell, Ells, L. W. Bailey, and Chalmers, on geology; Cope, on paleontology; Coste, on mining laws; and Hoffmann, on chemic analyses.

SHALER (N. S.). Preliminary report on the geology of the Cobscook Bay district, Maine.

Am. Jour. Sci. III, vol. 32, pp. 35-60.

Describes the topography of the shore line of New England and discusses its relation to glaciation. Describes Silurian rocks with ash beds, lava flows and dikes, and the stratigraphy, structure, and paleontology of the district.

SHUMARD (Geo. G.). A partial report on the geology of Western Texas, pp. 145, 8°, Austin, 1886.

Part first: Description of the formations from the loess to the Lower Silurian between lat. 29° and 35° and long. 94° and 108°. Part second: Journal of observations between Indianola, Tex. and the valley of the Mimbres, N. Mex. Illustrated by sections. Appendix on the geology of Grayson County.

Reviewed by Hill in Am. Jour. Sci. Jan. 1886.

Sierra Nevada, post-Tertiary elevation, LE CONTE.
  profiles through, REYER.

Silurian, Lower, Columbia County, N. Y., BISHOP.
  fire sand, Clinton County, N. Y., BRAINERD.
  fossils, Canaan, N. Y., DANA, FORD.
  fossils, Orange County, N. Y., DARTON.
  fossils in Potsdam, near Poughkeepsie, N. Y., DWIGHT.
  fossils, Minnesota, ULRICH.
  Lower Helderberg of Cayuga County, N. Y., WILLIAMS.
  Lower Helderberg of Cornwall Station, N. Y., DARTON.
  on border of New Jersey and New York Trias, BRITTON.
  shore of Lake Champlain, WHITFIELD.

Silurian, Upper, Clinton of Ohio, FOERSTE.
  Cornwall Station, N. Y., DARTON.
  Lower Helderberg in New York, WILLIAMS.
  of New England, DALE.
  Onondaga salt group at Buffalo, POHLMAN.

SIX (A.). Les mines de plomb argentifère du district d'Eureka, États-Unis d'Amérique.

Lille, Soc. géol. du nord, annales, tome 13, pp. 14-45.

Not seen.

SMITH (Aubrey H.). The railway cutting at Gray's Ferry road.

Phil. Acad. Nat. Sci. Proc. vol. 16, pp. 253-254.

Describes exposures of clays and gravels, the former containing wood and diatoms. Gives a section in artesian well at Black's Island, Delaware River.

SMITH (Eugene A.). Geological survey of Alabama, Bulletin No. 1, pp. 85, pl. 9, 8°, 1886.

In introduction to paleontologic papers by Aldrich and Meyer; gives a "Summary of lithological and stratigraphical features and subdivisions of the Tertiary of Alabama," pp. 7-14.

South America, Bolivia gold deposits, CORNING.
Paraguay rocks, POHLMANN.
petrography of Andes, KÜCH.

SPENCER (J. W.). Remarkable landslide near Brantford, Ontario.

Hamilton Ass. Jour. and Proc. vol. 1, part 2, pp. 55-57.

Describes the Erie clay of the district and discusses the cause of the slide and some ancient drainage features of the containing valley.

Staten Island. See **New York.**

STEVENS (R. P.). On the San Juan Mountains of Colorado

N. Y. Acad. Sci. Trans. vol. 5, pp. 121-130.

Describes many features of geology and mineralogy of the district. Gives sections and descriptions of the eruptive rocks and their relation to the Cretaceous, Carboniferous, &c.

STONE (George H.). Wind action in Maine.

Am. Jour. Sci. III, vol. 31, pp. 133-138.

Refers to the prevalence of drifting sands in the western part of Maine. Describes the polished bowlders of Bethel and elsewhere, and, after discussing causes of natural rock polishing, concludes that they have been polished by sand blown against them by wind.

T.

Taconic, controversy, DARTON, WINCHELL.
fossils from, at Canaan, N. Y., DANA, FORD.
history of study, DANA, HUNT.
sections by Hall, MARCOU.
stratigraphy and fossils, DANA.

Tahiti, DANA.

TAYLOR (William B.). A probable cause of the shrinkage of the earth's crust.

Am. Ass. Adv. Sci. Proc. vol. 34, pp. 200-202.

Also in full in Am. Jour. Sci. III, vol. 30.

Tennessee, geology east of Bristol, BOYD.
iron mines of Eastern, WILLIS.
iron and coal, PORTER.
iron mines, CHAUVENET.
lithographic stone from, HOWE.

Tertiary, Alabama and Mississippi, ALDRICH, LANGDON, MEYER, SMITH.
fossils, Anticosti, GRANT.
Kentucky, Texas, and Florida, HEILPRIN.
Montana, HAYDEN.
New Jersey, COOK.
Pliocene Sands, Montana and Idaho, MERRILL, PEALE.

Tertiary — Continued.
Southwest, HILGARD.
west coast Florida, HEILPRIN.
Wyoming, MARSH.

Texas, Cretaceous, HEILPRIN.
geology of Western, SHUMARD.
Travis County, Cretaceous, HILL.

Tide-water gneisses, MARTIN, BRITTON, NEWBERRY.

TODD (J. E.). Quaternary volcanic deposits in Nebraska.

Science, vol. 7, p. 373.

Describes deposits of volcanic dust from Knox and Seward Counties. Discusses their horizon and relation to silicious deposits, to the glacial ice sheet, and to the White River Tertiary sands.

Trias, American, NEWBERRY.
columnar trap of Orange, N. J., IDDINGS.
Cornwall iron mines, Pennsylvania, D'INVILLIERS, LESLEY, WILLIS.
fish remains, New Jersey, GRATACAP.
Holyoke, Mass., trap, EMERSON.
New Jersey, BRITTON.
Rocky Mountains, DAWSON.
structure of Connecticut Valley, DAVIS.
trap and sandstone at Tariffville, Conn., RICE.

U.

ULRICH (E. O.). Report on the Lower Silurian bryozoa, with preliminary description of some of the new species.

Geol. and Nat. Hist. Survey of Minn. 14th annual report, for 1885, pp. 55–103.

ULRICH (E. O.)—Continued.

In introductory remarks discusses equivalency of the beds just above the Saint Peter sandstone in Minnesota and southward.

Upper Silurian. See **Silurian**, Upper.

Utah, deformation of Lake Bonneville, GILBERT.

V.

VAN DIEST (P. H.). Notes on a trip to Telluride, San Miguel County, Colo.

Colorado Sci. Soc. Proc. vol. 2, pp. 28–30.
Describes geologic features of the volcanic and sedimentary rocks.

VAN HISE (C. R.). Upon the origin of the mica-schists and black mica slates of the Penokee-Gogebic iron bearing series.

Am. Jour. Sci. III, vol. 31, pp. 453–459.
Describes the stratigraphy and lithology of the rocks in question and discusses their metasomatic derivation from fragmental materials.

Vermilion Lake, iron ore districts near, WILLIS.

Vermont, geologic studies on shore of Lake Champlain, WHITFIELD.

Virginia, Rogers's Geology of, CAMPBELL.
geology of southwest part, BOYD.
iron mines, BENTON, CHAUVENET.

VOGDES (Anthony W.). Notes on the distribution of iron ores in the United States, compiled from various geological reports, pp. 24, 8°, Fortress Monroe, Va., 1886.

Occasional reference to geologic features.

W.

WALCOTT (Charles D.). Cambrian age of the roofing slates of Granville, Washington County, New York.

Am. Ass. Adv. Sci. Proc. vol. 35, pp. 220–221.
Statement of fossils found and the general stratigraphic and structural relations of the district.

—— Classification of the Cambrian system of North America.

Am. Jour. Sci. III, vol. 32, pp. 138–157.
Calls attention to the definiteness of the American Cambrian and gives a provisional key to its subdivisions. Describes the Cambrian of the Wasatch Mountains, Utah; the Eureka district, Nevada; Grand Cañon of the Colorado; Llano County, Texas; Keweenaw Point, and localities in New York, Massachusetts, and Vermont. Gives sections, discusses the fauna of the various groups and their stratigraphic positions. Discusses area of deposition of the Cambrian and gives a hypothetic map showing the supposed Keweenaw Land just before the deposition of the Upper Cambrian (Potsdam).

WALCOTT (C. D.)—Continued.

—— Second contribution to the studies on the Cambrian faunas of North America. U. S. Geol. Survey Bulletin No. 30, vol. 4, pp. 369, including 33 pls. 8°, Washington, 1886.

Discusses the terms Cambrian and Taconic and reviews previous investigations. Gives or quotes descriptions of the areas in Western Vermont; Troy, N. Y.; the St. Lawrence Valley, Newfoundland, Nevada, Utah, Texas, and elsewhere. Discusses the stratigraphic relations of the various beds and correlation of the sections. Gives table of and discusses the Cambrian faunas and their stratigraphic distribution.

WARRING (C. B.). Geologic climate in high latitudes.

Popular Science Monthly, vol. 29, pp. 352–367.

Washington, D. C., geology of, MCGEE.

Washington Territory, coals, WILLIS.

Washoe rocks, BECKER.

WENDT (Arthur F.). The pyrites deposits of the Alleghanies.

Columbia Coll. School of Mines Quarterly, vol. 7, pp. 154–188, 218–235, 301–323.
Also in Eng. and Mining Journal, vols. 41–42.

WHEELER (George M.). Report upon the third International Geographical Congress at Venice, Italy, 1881, pp. 586, 4°, Washington, 1885.

Describes geographic and geologic surveys of various countries.

WHEELER (H. A.). Temperature observations of the Lake Superior copper mines.

[Read to the St. Louis Academy of Science.]
Am. Jour. Sci. III, vol. 32, p. 125.
Incidentally gives a brief description of the geology of the district.

WHITE (I. C.). The criticisms of the anticlinal theory of natural gas.

The Petroleum Age, vol. 5, No. 10, pp. 1464–1465, Nov. 1886.
In defense of the theory.

—— The geology of natural gas.

The Petroleum Age, vol. 5, No. 2, pp. 1263–1267 and map, March, 1886.
Describes anticlinal axes of Western Pennsylvania and discusses their relation to the occurrence of natural gas.

WHITFIELD (R. P.). Notice of the geological investigations along the eastern shore of Lake Champlain, conducted by H. M. Seely and Ezra Brainerd, with description of the new fossils discovered.

Am. Mus. Nat. Hist. Bulletin, vol. 1, No. 8, pp. 293–345 and pls. 24–34.
Preceded by a description of the geology of the vicinity of Fort Cassin, Vt. Describes Lower Silurian limestones and their fauna; calls attention to a fault and dike, and gives a map showing the areal geologic relations of the district.

—— The molluskan fauna of the New Jersey marls.

[Read to American Association Adv. Sci., 1886.]
Brief abstract in Am. Jour. Sci. III, vol. 32, pp. 320–321.
Discusses equivalency of the Cretaceous beds with those of the Upper Missouri section and of the Eocene beds with those of Claiborne.

WILLIAMS (E. H. J.). A manual of lithology, 8, 135 pp. 24°, New York, 1886.

WILLIAMS (George H.). The gabbros and associated hornblende rocks occurring in the neighborhood of Baltimore, Md.

U. S. Geological Survey Bulletin No. 28, vol. 4, pp. 611–688 and 4 pl.
Describes the occurrence of the rocks and gives a map showing outcrops. Describes and figures their petrography and discusses the derivation of the gabbro-diorite from the hypersthene-gabbro.

—— The peridotites of the "Cortlandt series" on the Hudson River near Peekskill, N. Y.

Am. Jour. Sci. III, vol. 31, pp. 26–41.
Describes the petrography and distribution of the rocks of Stony and Montrose Points.

WILLIAMS (Henry S.). A revision of the Cayuga Lake [New York] section of the Devonian.

[Read to American Association, 1886]
Brief abstract in Am. Jour. Sci. III, vol. 32, p. 321.
Discusses the fauna of the Hamilton and its relation to that of the Coralline beds, the Moscow shales, the Tully limestone, and the Genesee.

—— On the classification of the Upper Devonian.

Am. Ass. Adv. Sci. Proc. vol. 34, pp. 222–234.
Discusses the faunal relations of the beds along the lines of ten sections in Ohio, Pennsylvania, and New York, giving a table of columnar sections in illustration of his observations on the stratigraphic relations of the faunas. Calls attention to the relation of fauna to rock texture.

WILLIAMS (S. G.). Note on the Lower Helderberg rocks of Cayuga County, New York.

Am. Ass. Adv. Sci. Proc. vol. 35, pp. 214–215.
Statement in regard to fauna of strata overlying the plaster beds of Cayuga Lake.

—— The Tully limestone, its distribution, its irregularities, its character, and its life.

Abstract in Am. Ass. Adv. Sci. Proc. vol. 35, pp. 213–214, and Am. Jour. Sci. III, vol. 32, p. 320.
Also describes some structural features.

—— The westward extension of rocks of the Lower Helderberg age in New York.

Am. Jour. Sci. III, vol. 31, pp. 139–145.
Abstract in Am. Ass. Adv. Sci. Proc. vol. 34, pp. 235–236.

WILLIAMS (S. G.)—Continued.

Describes a mixed Tentaculite and Lower Pentamerus fauna in the gypsiferous limestones of Cayuga County. Gives a representation of the formation by the Tentaculite limestone at the outlet of the Skaneateles Lake, and at Oriskany Falls near Utica, by the Tentaculite overlaid by a mixed Lower Pentamerus and Delthyris shale. Calls attention to the increasing indistinctness of the divisions and the predominance of the lower portion of the formation westward. Discusses the relations of deposition to that of the Salina beds.

WILLIAMS (Samuel J.). Applied geology, pp. 386, 12°, New York, 1886.

Not seen.

WILLIS (Bailey). Notes on samples of iron ore collected in North Carolina.

Tenth Census: Report on the Mining Industries of the United States, pp. 301–329.

Description of the geologic features of some mines.

—— Notes on the samples of iron ore collected in Ohio.

Tenth Census: Report on the Mining Industries of the United States, pp. 235–243.

Description of some features of the ore bearing strata.

—— Notes on the samples of iron ore collected in East Tennessee.

Tenth Census: Report on the Mining Industries of the United States, pp. 331–350.

Notice of the geologic features at some of the mines.

—— Report of a trip on the Upper Mississippi and to Vermilion Lake, Minnesota (1880).

Tenth Census: Report on the Mining Industries of the United States, pp. 457–467.

Description of the geology of the iron bearing and associated strata and discussion of their stratigraphic and structural relations.

—— Report on certain magnetites in Eastern Pennsylvania.

Tenth Census: Report on the Mining Industries of the United States, pp. 223–234.

Describes the Cornwall, Wheatfield, Boyertown, and other mines and discusses the geologic relations of the associated formations from field studies in 1880.

—— Report on the coal fields of Washington Territory.

Tenth Census: Report on the Mining Industries of the United States, pp. 759–771.

Detailed description of the geologic and stratigraphic relations of the coal beds and associated formations. The paper is illustrated by numerous colored maps and structural and columnar sections of the formations and sections and analyses of the coal beds.

WINCHELL (A.). Geologic studies or elements of geology, 26, 513 pp. 12°, Chicago, 1886.

Text book embracing many illustrations of American geologic features.

—— Sources of trend and crustal surplusage in mountain structure.

Am. Ass. Adv. Sci. Proc. vol. 34, pp. 209–212.

—— Walks and talks in the geological field, 8°, New York, 1886.

WINCHELL (N. H.). Notes on some deep wells in Minnesota.

Geol. and Nat. Hist. Survey of Minn. fourteenth annual report, for 1885, pp. 11-16 and 348–353.

Record of wells in Minneapolis, Saint Peter, Mankato, Herman, Brown Valley, Milbank, Rosenfeld Station, Sleepy Eye, Austin, Albert Lea, Morristown, Tracy, and Gibbon, in Minnesota and adjacent States, and discussion of the horizon of some of the beds passed through.

—— Revision of the stratigraphy of the Cambrian in Minnesota.

Geol. and Nat. Hist. Survey of Minn. fourteenth annual report, for 1885, pp. 325–337.

Describes geologic studies in the valley of the Minnesota and discusses the position of the Saint Peter sandstone, Shakopee limestone, Saint Lawrence limestone, New Richmond beds, magnesian limestone, Jordan sandstone, and other associated beds.

—— Geological and natural history survey of Minnesota, fourteenth annual report, for 1885, pp. 353, 2 pls. 8°, Saint Paul, 1886.

Administrative report. Papers on geology, by Winchell, Ulrich, and F. L. Washburn; on paleontology, by Ulrich and Winchell; on entomology, by O. W. Oestland; on conchology, by U. S. Grant; bibliography of foraminifera, by Woodward; and on mineralogy, by Winchell.

—— The Taconic controversy in a nutshell.

Science, vol. 7, p. 34.

A plea for the retention of the term "Taconic."

Wind action, STONE.

Wisconsin, Archean, IRVING, VAN HISE.
iron mines of Northern, PUTNAM.
Penokee-Gogebic series, VAN HISE.

WOODWARD (Robert S.). On the rate of recession of Niagara Falls.

[Read to American Association, 1886.]

Brief abstracts in Am. Jour. Sci. III, vol. 32, pp. 322-323, and in Science, vol. 8, p. 205.

Comparison of results of recent and former surveys.

WOOLMAN (Lewis). Oriskany sandstone in Lycoming County, Pa.

Phila. Acad. Nat. Hist. Proc. vol. 16, pp. 297-298.

Describes occurrence of a line of outcrop not shown on geologic maps.

WORTHEN (A. H.). The Quaternary deposits of Illinois.

Am. Ass. Adv. Sci. Proc. vol. 34, pp. 214.

States contents of paper, which is to be published in vol. 13 of the Geological Survey of Illinois.

WRIGHT (G. F.). A salt mine in Western New York.

Science, vol. 8, p. 52.

Describes salt bed and strata passed through in a 1,105-foot shaft.

Wyoming, eocene deposits of, MARSH.

report on geology, AUGHEY.

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